THE UNIVERSITY OF ALBERTA

FALL, 1969

MIGRATION OF PEOPLE TO AND WITHIN THE

COUNTY OF GRANDE PRAIRIE, ALBERTA,

1956 to 1967

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF ARTS

DEPARTMENT OF GEOGRAPHY

EDMONTON, ALBERTA

FALL, 1969

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES


The undersigned certify that they have read, and recommend to
the Faculty of Graduate Studies for acceptance, a thesis entitled Migration
of People to and Within the County of Grande Prairie, Alberta, 1956 to 1967
submitted by Peter John Marriott in partial fulfilment of the requirements
for the degree of Master of Arts.

ABSTRACT

The study is concerned with migration to and within the County of Grande Prairie, Number one, Alberta, over the period 1956 to 1967.

Several hypotheses relating the characteristics of the migrants and the characteristics of the places of destination to the distance migrated and the incidence of migration are postulated and tested. Stepwise regression is used to test the relationships between the incidence of migration and various characteristics of the place of destination. The incidence of migration is shown to be related significantly to only one characteristic of the place of destination, the total population. Simple regression and correlation analysis is used to determine the degree of relationship between various characteristics of the migrants and the distance migrated. Of the migrant characteristics only age is shown to be related significantly to the distance migrated, although the mean personal education and mean income of the migrant group are found to be higher than those for the population as a whole.

Net-migration within the County varies markedly from one study subregion to another. The majority of migratory moves within the County are made towards urban areas and the population of the County is becoming increasingly concentrated at two major urban foci.

## ACKNOWLEDGEMENTS

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# INTRODUCTION

Throughout the period 1956 to 1967, with which this study is concerned, the spatial distribution of population within the County of Grande Prairie has undergone considerable change. Although the population of the County increased by over thirty-one percent, from 17,067 in 1956 to 22,432 in 1966, the population of several of the urban areas increased by over forty percent in the same period and that of most of the rural areas declined. Migration is seen as the main component of this population redistribution. The degree of rural-urban migration is marked and is explainable largely by the changes that have occurred in agricultural practices and the desire on the part of many rural folk for the benefits of urban living. In addition to the migrations within the County, however, there is a large amount of migration to the County from both other places in Alberta and other parts of Canada. Sixty-three percent of all the people reporting that they had migrated over the study period had moved to the County from places outside it, of these seventy-four percent migrated to Grande Prairie. The pattern of population change due to net-migration shows an increasing concentration of people in the largest or urban places. Six of the study subregions showed net-migration gains over the quinquennium 1956 to 1961, but only two subregions: Beaverlodge and Grande Prairie, had net-migration gains over the period 1961 to 1966.

Migration is a spatial process of population redistribution and is a mechanism by which a short-run population equilibrium is approached; the need for migration occurs because the process of balancing births and deaths moves so slowly. As opportunities tend to be unevenly distributed over space, people migrate to those areas in which they believe they can better themselves. The reasons for migrating are extremely varied. Some

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people migrate for financial gain, some are attracted by physical amenities, some move to be near relatives and some are not sure why they move. Whatever the reason or reasons a person has to migrate, many researchers have long been cognizant of the apparent effects of distance as a barrier to movement and although distance has been of diminishing importance as a barrier, as our transportation and communication technology has advanced, its effect is still felt.

The study attempts to explain the incidence of migration and the distance migrated on the basis of numerous characteristics of the individual migrant and differential characteristics of each of the study subregions. The subregional variation in population movement is also discussed. Although data on the characteristics of the subregions is available in various published and unpublished forms, data on the characteristics of the migrant group could be obtained only by interviewing migrants. Much of this study is, therefore, based on the results of a questionnaire survey conducted in June and July of 1967.

CHAPTER I

THE STUDY AREA

I.  LOCATION AND DEFINITION OF THE AREA UNDER STUDY

The study area, the County of Grande Prairie No. I, is situated
approximately 300 miles northwest of Edmonton, adjoining the border with
British Columbia (See Map I), and forms part of the Peace River Region.
The Region is the most northerly of any recognized agricultural area in
Canada and is unique in its physical isolation from other settled areas.
It is separated from the interior Plateau system of B.C. on the west by
the Rocky Mountain Trench and from agricultural areas to the south and
east by the rough, non-arable, Swan Hills sector in Alberta (Robinson,
1963, p. 77).

The County was selected as a study area for two reasons:
(a) its boundaries are reinforced by demographic and physical boundar-
ies; and (b) the County population of approximately 22,000 people pro-
vided a sufficient, yet not too large, population from which to select
sample data.

The County is almost separated from other areas of habitation
and the problem of overlapping central place influences is almost com-
pletely avoided.  Map 2 shows the area of settled land and the almost
uninhabited periphery to the County.  The County is, furthermore, sur-
rounded by physical barriers:  low hills to the west, the Saddle Hills
to the north, the Smoky River to the east and the Wapiti River and Swan
Hills to the south, which effectively delineate the low non-continuous
plain which constitutes the County of Grande Prairie.  Thus the study area

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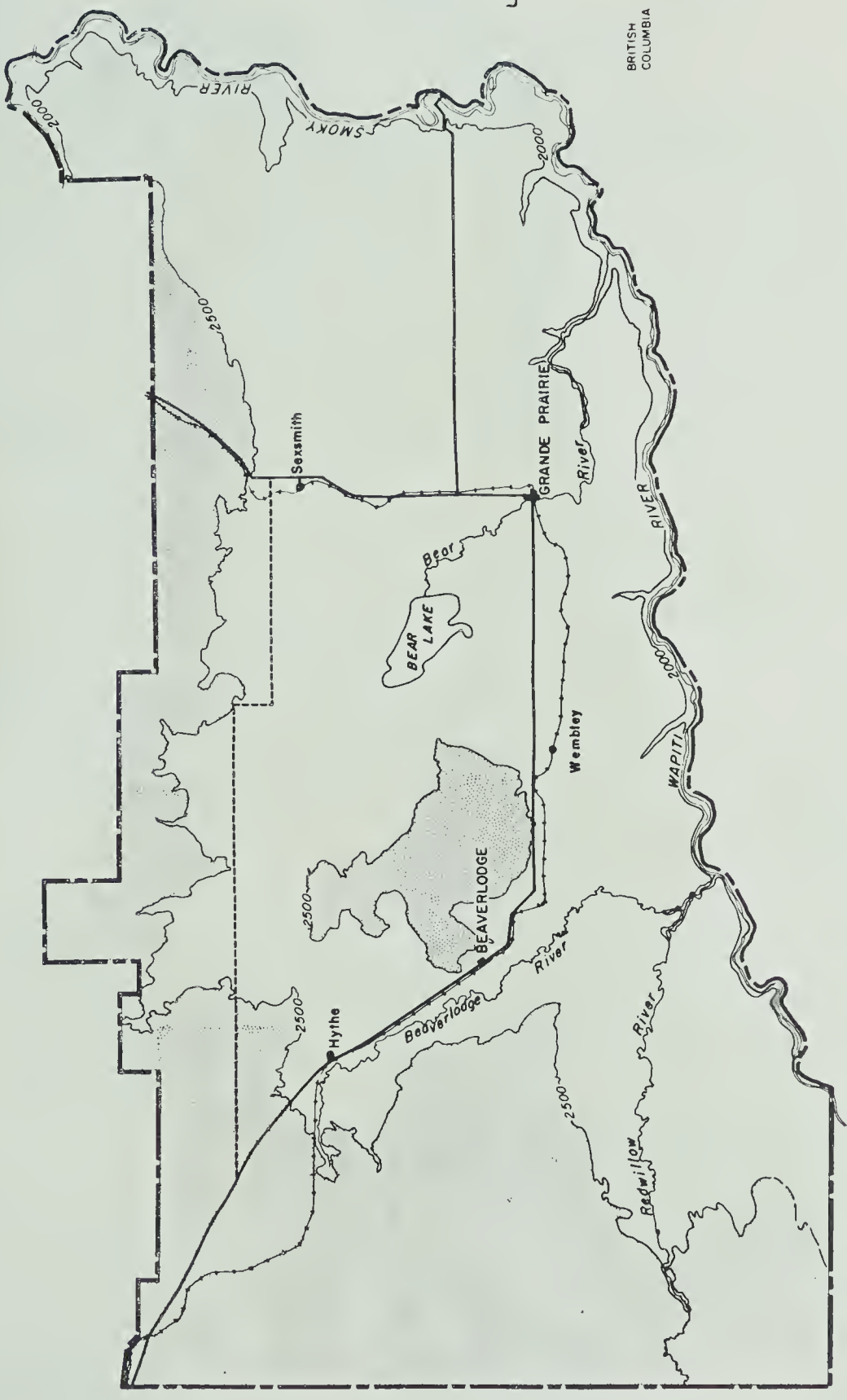
N

LOCATION, COUNTY OF
GRANDE PRAIRIE

BRITISH
COLUMBIA

NWT

ALBERTA

SASK

Edmonton

Calgary

USA

SMOKY RIVER

2000

2500

Sexsmith

GRANDE PRAIRIE

Bear River

Bear Lake

2500

RIVER

Wembley

WAPITI

2000

BEAVERLODGE

2500

Beaverlodge River

Hythe

2500

Redwillow River

2500

L E G E N D

HIGHWAYS

RAILWAY

COUNTY BOUNDARY

TOWN

VILLAGE

2000 CONTOURS

LAND OVER 2500'

SOURCE Dep't of Mines & Technical Surveys, 1963

MAJOR PHYSICAL FEATURES
& TRANSPORTATION

COUNTY OF GRANDE PRAIRIE

P.J.M  Aug8t, 1968

Miles 5  0  5  Miles

OCCUPIED & UNOCCUPIED FARMLAND
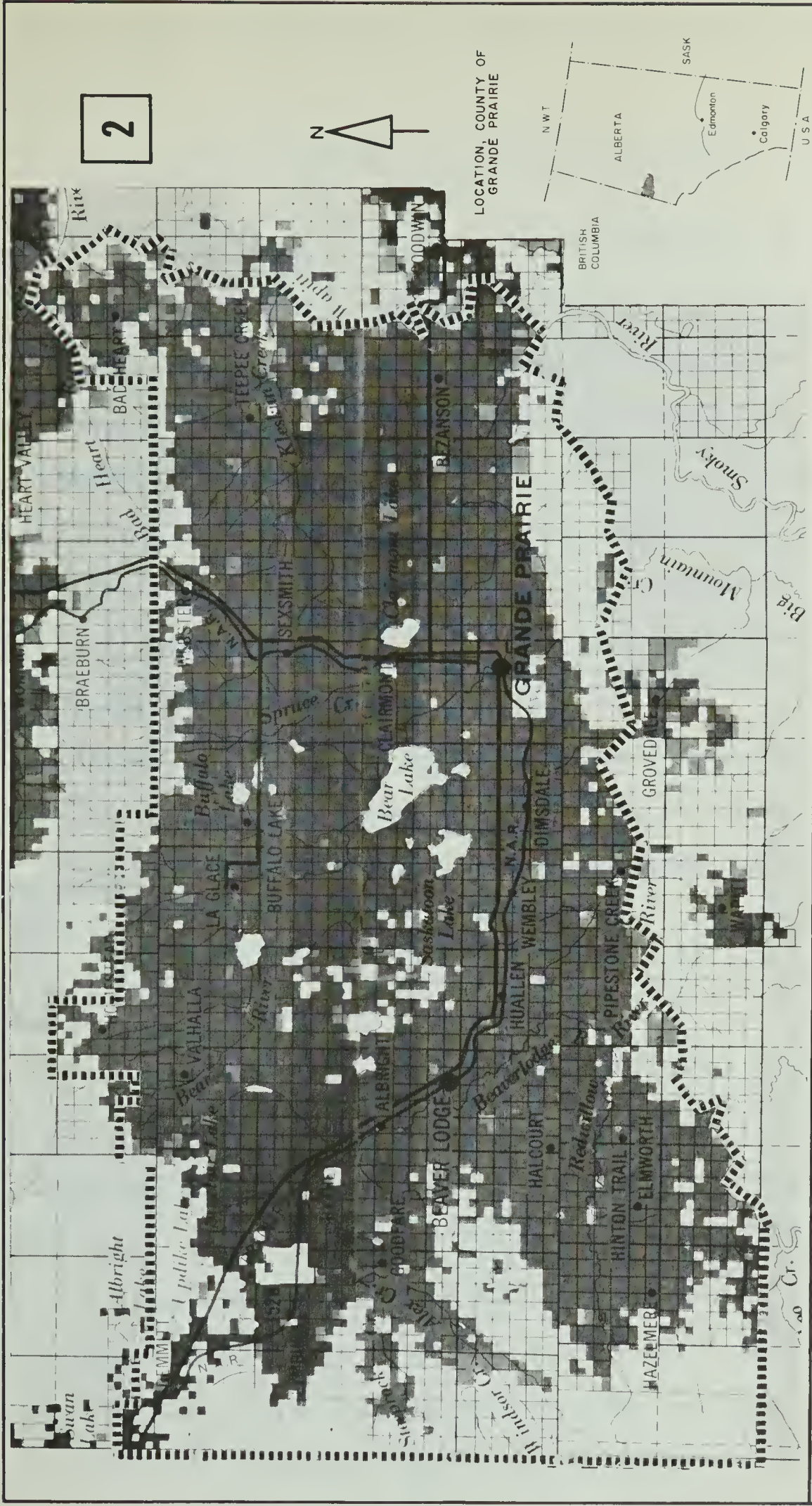
COUNTY OF GRANDE PRAIRIE

LEGEND

PATENTED AREAS & AREAS HELD UNDER LEASE

PUBLIC LANDS AVAILABLE FOR SETTLEMENT

AREAS WITHDRAWN FROM SETTLEMENT

COUNTY BOUNDARY

SOURCE Dep't of Mines & Technical Surveys, 1963 & Dep't of Lands & Forests, Public Lands Open for Settlement (1961)

P J M March , 1969

LOCATION, COUNTY OF GRANDE PRAIRIE

N W T

ALBERTA

SASK

Edmonton

Calgary

BRITISH COLUMBIA

U S A

Miles 5    0    5   Miles

is defined clearly in three ways:  topographically, politically, and demographically.

## II.  THE RESOURCES OF THE PEACE RIVER REGION

The economy of the County of Grande Prairie is very dependent on the resources lying outside of its boundaries.  It is impossible, therefore, to discuss adequately the economy of the County without first obtaining an understanding of the economy of the whole Peace River Region.  For the purposes of providing this background information the Peace River Region is loosely defined as the area within the Peace River drainage basin although the demands of brevity will mean that much smaller areas, sometimes confined to the Alberta Central Peace District, will provide a sufficient area for discussion.

The development of the whole region has been spurred by agriculture but other resources, such as:  oil, gas, forestry, and minerals, are of increasing importance in stimulating economic growth and in aiding diversification of the local economy.

## (a) Agriculture

Settlement of the region, begun in 1905, was slow for many years because the majority of potential settlers were dubious that crop production was possible at such latitudes.  The Peace Region soon came to the attention of the agricultural world, however, when in the mid-nineteen twenties farmers of the area began winning top awards in international agricultural competitions.  The Peace Region established a reputation for being prime agricultural land and the settlement recession, revealing itself early in the decade, ceased.  Just as the availability of arable

land provided the basis for effective settlement of the Peace River Area
(Wonders, 1956, p. 2) so today does arable land, via the value of agricul-
tural products produced, remain of great economic significance in the
Central Peace River District (Northern Alberta Devt. Council, 1965, p. 16).

Although agriculture is accepted as the major base of the econ-
omy of the area, the future of the whole industry is uncertain.  Many of
the farms now occupied are marginal, some are too small for economic oper-
ation and others, hastily settled early in the century, are located on poor
soils often far away from a market centre (Robinson, 1961, p. 509).  There
are several changes occurring in the agricultural economy of the whole
region which are common to the County under study.  Immediately after world
war II, wheat was almost the universal crop in the area.  By the mid-fifties,
however, a trend away from grains and fallow land toward an increasing pro-
duction of hay, seed crops, hogs and beef cattle became apparent; Table I
shows the pertinent changes.  Whereas the County had 128,456 acres in wheat
in 1951, the acreage dropped to 41,880 acres by 1956 but rose again to
69,476 acres in 1966.  The acreage in cultivated hay increased simultane-
ously by 50,000 acres from 1951 to 1966, and the number of beef cattle
increased from 5,753 in 1951 to 31,127 in 1966.

The trends are partly the result of market forces and partly due
to the adoption, by local farmers, of the recommendations of the Experimen-
tal Research Station at Beaverlodge which reviewed the land use patterns
in the region and proposed changed cropping systems better adapted to the
soils and climate of the area (Robinson, 1961, p. 510).  The great distance
from markets has made crops with a high value in relation to their bulk
particularly desirable, thus speeding the trend towards the production of
flaxseed and forage seeds.  Table I shows also the variability of the

TABLE I

AGRICULTURAL TRENDS: COUNTY OF GRANDE PRAIRIE

|  | 1951 | 1956 | 1961 | 1966 |
|---|---|---|---|---|
| 1. No. Farm Owners | 1,746 | 1,503 | 1,340 | 1,288 |
| 2. No. Occupied Farms | 2,819 | 2,192 | 1,824 | 1,984 |
| 3. Acres Occupied Farmland | 1,032,373 | 939,145 | 1,033,674 | 952,340 |
| 4. Av. Size of Farm (Acres) | 351 | 429 | 552 | 485 |
| 5. Acres Wheat | 128,456 | 41,880 | 78,869 | 69,476 |
| 6. Acres Oats | 166,400 | 127,893 | 41,829 | 78,081 |
| 7. Acres Barley | 50,005 | 95,314 | 137,667 | 98,565 |
| 8. Acres Flaxseed | 12,002 | 20,997 | 20,689 | 18,852 |
| 9. Acres Rapeseed | | | 24,124 | 4,389 |
| 10. Acres Cultivated Hay* | 87,923 | 100,294 | 144,319 | 137,265 |
| 11. No. Beef Cattle | 5,753 | 25,787 | 39,294 | 31,127 |
| 12. No. Swine | 15,048 | 24,542 | 17,797 | 26,839 |

Source: Canada, D.B.S., _Agriculture_, _Alberta_, Vol. 5.3-3, Ottawa, 1951, 1956, 1961, 1966.

*Includes: alfalfa, clover and all cultivated grasses.

production in the South Peace. From one census year to the next the acreage in various crops has changed, sometimes markedly, in response to market prices and weather patterns. The variability in the acreage of occupied farmland is difficult to explain but the three years immediately preceeding the 1966 census were marked with bad weather and bad growing conditions, patchy crops and serious financial problems. Some small farms were sold after this series of bad years (pers. comm, Miller, 1968).

Not only is the pattern of production changing but so too is the nature of the productive unit. With increasing mechanization, the consolidation and enlargement of farm holdings is vital if farmers are to maximize their incomes. The population shift away from agriculture and the concomitant rapid urbanization process which is seen across Canada is marked within the County of Grande Prairie. Table I shows that the number of farms in the County decreased from 2,819 in 1951 to 2,192 in 1956, with a further drop to 1,984 in 1966. The increase in the average size of farm holding mirrors this trend so that whereas the average size of farm was 351 acres in 1951, it had increased to 429 acres in 1956 and 485 acres by 1966. The resultant changes in the labour force structure are associated with the diversification of the local economy and are vital in raising the productivity of the area.

(b) Forestry

The Central Peace River District of Alberta contains over 2.5 million acres of forested land consisting largely of white spruce, pine, and poplar. Estimates of the timber reserves in the Grande Prairie Forest Division put the available volume of saw logs at over 4.5 million m.f.b.m.[1] and the volume of pulpwood at over 55 million m.f.b.m.. Management of merchantible timber reserves on a perpetual sustained yield basis would allow 89,000 m.f.b.m. of saw logs, and 1.5 million cords of pulpwood to be harvested annually. Timber cuts in the Grande Prairie Forest Division in 1961 were well below the allowable cut; only 55,000 m.f.b.m. of lumber was harvested and the production of pulpwood was negligible (N.A.D.C., 1965, p. 27). While cuts in the Grande Prairie Forest Division are well below

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[1]Thousands of foot board measures. One foot board measure is one square foot by one inch.

the allowable cut, the Division is the largest producer of lumber in the Province of Alberta (Wonders, 1956, p. 5).

Since the nineteen-forties, forestry has emerged as a major industry in the Peace River Region.  Lumbering activities expanded along the rail lines but the depletion of accessible stands of timber close to the railways, and the development of better highways and trucking facilities, led to the gradual spread of logging operations to the fringes of the area (Willis, 1966, p. 65).  More recently the construction of roads for oil exploration has hastened the even harvesting of the forest resource.

"Until 1956, when the oil and gas industry superseded it, the forest industry was second only to agriculture in terms of importance to the regional economy" (Robinson, 1961, p. 510).  Although this former position is not likely to be reached again, the continued expansion of the plywood factory established in 1953 at Grande Prairie, and the pulp mill proposed at a site within thirty miles and to the south of that city, should do much to retain lumber's position in the economy of the area.  The pulp mill, expected to become operational by July, 1973 (Alberta, Gazette, 1969, p. 38-39) may return the forest industry to its former position in the economy of the County.  Such an industry would have a multiplier effect on the local economy so that up to 3,500 people, in direct labour force, related industries, tertiary services and families, would probably be attracted to the area (N.A.D.C., 1965, p. 28).

(c) <u>Oil and Gas</u>

Since the first gas well was established at Fort St. John in 1952 and the discovery of the Sturgeon Lake oil field in 1953, the petroleum and natural gas industries have acted as catalysts to regional growth.

Not only has the activity associated with the exploration and the pro-
duction of oil products stimulated the local economy but it has also con-
tributed a secondary effect in that the construction of roads into hith-
erto unopened areas has hastened the settlement of the region.  The Peace
Country has become a major petroleum producing area with oil and gas lines
to Vancouver from major fields northeast, north, and northwest of Fort
St. John and northwest of Dawson Creek; oil is also piped south to Edmonton
from the Rainbow Lake field.  A small oil refinery was established at
Grande Prairie in 1957 but removed in 1964 as operation of such a small
plant far removed from major markets proved uneconomic.

Besides the major pipelines to markets external to the region,
lines from smaller gas fields supply the internal markets of the area with
Grande Prairie being supplied from two fields to the north (Vanderhill,
1963, p. 34).  Local gas lines serve two major purposes:  they conduct gas
for domestic, commercial and industrial use and also transport an energy
source for thermal power generating plants which supply most of the local
electrical power for all urban and rural purposes.  Most recently a line
has brought natural gas to consumers in Hythe and Beaverlodge (N.A.D.C.,
1965, p. 35).

Over sixty employees in the County work directly in the petroleum
industry,[2] while the industry has also contributed to the growth of the
region, especially Grande Prairie, by stimulating the establishment of
local supply industries.  There are nine oil well servicing establish-
ments in Grande Prairie, three oil well drilling concerns, three oil field

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[2] Six respondents, to the ten percent random survey of Grande
Prairie and the fifteen percent random survey of the remainder of the
County, to which seventy-two percent of the people polled-replied, indi-
cated employment in the petroleum industry.

hauling companies, and two oil and gas servicing businesses (Grande
Prairie Industrial Devt. Comm., 1968, p. 4).  The indirect effect on the
economy is marked but is difficult to estimate accurately.

(d) Other Resources

Iron-ore deposits were discovered in the Clear Hills, northwest
of Fairview, in 1956.  Proven deposits of the ore, which contains 30-35
percent iron, are estimated at over 225 million tons (Hefferman, 1965,
p. 61).  A pilot scheme is being conducted to find ways in which to
develop an economical extraction and reduction method.  There is a world-
wide market for pure iron in a powdered form and it is "confidently expected
that ... a full scale processing plant will be designed within three to five
years" (N.A.D.C., 1965, p. 32).

Recent surveys south of the Wapiti River reveal that there are
large reserves (up to 9 billion tons) of good quality coking-coal in the
southerly portion of the Smoky River coal area (N.A.D.C., 1965, p. 34).
A new coking-coal operation at Grand Cache, 90 miles south of Grande
Prairie, is expected to export 3 million tons of coal to Japan annually
over the next fifteen years (Grande Prairie Ind. Devt. Comm., 1968, p. 4).
Grande Prairie is the nearest market centre of any size and the City can
expect to derive many direct and indirect benefits.

Three other resources deserve note:  (a) The region contains
considerable hydro-electric potential with several possible dam sites on
the Smoky and Athabasca rivers.  Although hydro-electric power schemes pro-
vide little direct stimulus to regional growth, the availability of a
cheap power source may be important if the area is to develop industrially.
(b) Easily accessible silica deposits near the Town of Peace River are

reported to contain one million tons of high-grade silica which could well be utilized in the container manufacturing industry (N.A.D.C., 1965, p. 32). (c) Large deposits of elemental sulphur have been discovered in the North Peace and Rainbow Lake areas and much exploratory work is presently underway (Alta. Dept. Industry and Tourism, 1968, p. 28).

## III.  RECENT TRANSPORTATION DEVELOPMENT, SETTLEMENT,
## AND POPULATION CHANGE

Transportation has always been extremely important in settlement processes, and nowhere more so than in the Peace River Region.  From 1948 onwards, the development of modern highways, providing access to both Vancouver and Edmonton, has reduced the isolation which for decades had been the major factor inhibiting the growth of the Peace River Region.  The Alaska Highway, from Dawson Creek to Fairbanks in Alaska, was completed in 1942 and brought a boom period to the Town of Dawson Creek, which had a 1951 population seven times that of its 1941 population.  Many of the communities along the route leading to Dawson Creek also benefitted from the increased traffic (See Table II).  Until 1952 all this traffic was funnelled through Edmonton and the Lesser Slave Lake approach route (Vanderhill, 1963, p. 34) but the route proved inadequate when the construction of the John Hart Highway to Vancouver from Dawson Creek in 1952 added greatly to the traffic flow (Willis, 1966, p. 71).  Highway 43 from Edmonton through the Swan Hills to Valleyview, was completed in 1956 and connected with Highway 34 to Grande Prairie.

Highway 43, which is completely paved, has proved to be the most important routeway into and out of the area, and has reduced considerably

TABLE II

GROWTH OF TOWNS AND VILLAGES ALONG THE ALASKA HIGHWAY ROUTE

1941 to 1961

| TOWN OR VILLAGE | 1941 | 1951 | 1961 |
|---|---|---|---|
| Dawson Creek | 518 | 3,589 | 10,946 |
| Grande Prairie | 1,724 | 2,664 | 8,352 |
| Wembley | 188 | 251 | 303 |
| Beaverlodge | 331 | 514 | 897 |
| Hythe | 247 | 342 | 449 |

Source: Canada, D.B.S., Population, Historical, Vol. 1.1-10 Ottawa, 1961.

both the travel time and the transport cost to Edmonton and has increased the linkages with the rest of the Alberta economy. Roads have been continually upgraded but not until 1950 was the highway from Grande Prairie to Valleyview paved, and as late as 1956 the only paved highway west of Grande Prairie was the section leading to Beaverlodge (Willis, 1966, p. 74). Associated with the construction and improvement of the main highways, has been the extension and upgrading of the local road system to improve access to farm districts. Numerous roads which had only dirt surfaces in the early fifties are now gravelled and many farmers have connections with the main highways.

The continued road improvement has been a major factor in the expansion of settlement to the north of the region, but has had a reverse effect in the County of Grande Prairie. Some marginal areas have been removed from production and agricultural lands close to highways are being

more intensively worked. However, transportation not only facilitates the settlement of an area, but it also allows people to leave more easily when economic conditions in the area are comparatively worse than those in areas outside.

There is much land, possibly 6 million acres (Wonders, 1956, p. 4), still remaining to be settled in the Peace Region but the majority lies on grey wooded soils far from the County under study. Whereas the North Peace still continues to attract homesteaders the process of land settlement has all but ceased in the area around Grande Prairie. During the period 1951 to 1967 only twenty new homesteads (less than one percent of the County area) were patented in the County (Alta., Dept. Lands and Forests, 1951, '57, '61, '67). Although few new farm settlers can be expected in the County the effect of further settlement, and increased production and income, in areas outside the County will have an economic impact on market centres such as Grande Prairie.

Recent population and economic expansion have been stimulated by oil, gas, and forestry development (Robinson, 1961, p. 509) and the rate of population increase in the post-war period has been approximately the same as that of Alberta and B.C. as a whole. Every community in the region showed growth in the early fifties, but by the late fifties some were showing net losses of population. The population of the County rose by roughly 58 percent in the fifteen years from 1951 when the population was 14,300, to over 22,400 in 1966 (See Table III). Table III shows that apart from Hythe which registered a slight decline in population after 1956, the towns and villages of the County have been growing rapidly while there has been a small but significant decline in the rural population.

TABLE III

POPULATION CHANGES:  COUNTY OF GRANDE PRAIRIE

| | 1951* | 1956 | 1961 | 1966 | Percent Change '56/'66 |
|---|---|---|---|---|---|
| Farm Population | 10,429 | 7,911 | 7,236 | 7,166 | - 9.1 |
| Wembley | 251 | 272 | 303 | 299 | +10.0 |
| Sexsmith | 331 | 345 | 531 | 491 | +42.3 |
| Hythe | 342 | 481 | 449 | 445 | - 7.5 |
| Beaverlodge | 514 | 768 | 897 | 1,083 | +41.0 |
| Grande Prairie | 2,664 | 6,302 | 8,352 | 11,417 | +81.0 |
| Total Population: Incorporated Settlements | 4,102 | 8,168 | 10,532 | 13,735 | +68.1 |
| Total Population in the County | 14,300 | 17,067 | 19,335 | 22,432 | +31.3 |
| Pop. Inc. Settlements as % of Total County Pop. | 28.7 | 47.8 | 54.5 | 61.3 | – |

Sources:  Canada, D.B.S., Agriculture, Alberta, Vol. 5.3-3, Ottawa, 1951, 1956, 1961, 1966;  Canada, D.B.S., Population, Counties and Census Subdivisions, Vol. 1.1-5, Ottawa, 1951, 1956, 1961, 1966.

*Approximate; includes census subdivisions 739-742, 769-772, and 800-801.

The farm population of the County dropped from 7,911 people in 1956 to 7,166 people in 1966, a decline attributable to changes in the sizes of farm holdings mentioned earlier, and a desire, especially on the part of the younger generation, for the amenities of urban living.  There were also several years of bad weather conditions; either too wet or too dry.  Many of the farmers who sold their land were near retirement age and although some of the farms have been bought by local people, a larger number have been bought by people moving into the County from other areas where they

generally sold their land for a higher price than the cost of land of

comparable productivity in the County (pers. comm., Miller, 1968).

While the rural population seems to have stabilized somewhat,

the population of the urban communities has, on the whole, increased

rapidly. Table III shows that two of the smaller centres are growing in

population, but Hythe's population declined over the period 1956 to 1966.

Furthermore, only Beaverlodge and Grande Prairie have grown consistently,

the latter by 81 percent over the ten year period, an increase from 6,302

in 1956 to 11,417 in 1966. This increase accounted for over 95 percent of

the net population gain of the County as a whole. It appears as though

the population of the County is moving towards a new equilibrium in which

people will concentrate at only the largest centres.

Throughout the period under study the population growth in the

County is attributable not only to natural increase but also to net

migration into the area. Natural increase, even assuming all persons born

in the County had stayed in it, accounts for only about 79 percent of the

population gain of the County as a whole. Besides net migration into the

County, there is considerable migration within the County so that some

areas are increasing in population while others are declining. The larger

urban communities have made net gains through migratory movement but the

smaller settlements and rural areas show net losses. The following study

attempts to elucidate the mechanism of population change through migration

to and within the County of Grande Prairie.

# CHAPTER II

## THE LITERATURE, THE VARIABLES USED IN THE STUDY,
## AND THE OBJECTIVES OF THE STUDY

### I. THE LITERATURE

"Migration, which is merely the sum of person movements, has
long been observed to display a certain regularity in its characteris-
tics" (Porter, 1956, p. 317). The major spatial variables in migration
are:

1. The distance from the source, i, to the destination, j.

2. The opportunities at i compared with those at j.

3. Population size, structure and distribution at i and j.

4. The information about j existing at i.

Although migration is frequently a major symptom of basic social
change and is a necessary element of normal population adjustment, two of
the prime forces motivating people to migrate are the expected economic
benefits and the availability of amenities at the point of destination.
Some areas have better climatic or social amenities, eg. California, other
areas provide expanding opportunities for employment, while source areas
(of people) may have poor physical amenities or they may be areas of
stationary or declining economic opportunities. Migration, then, occurs
towards areas which are considered to be desirable for either economic or
non-economic reasons. People move towards those areas in which they _believe_
they can attain certain desired goals with a minimum of effort. At the
same time what is desirable to one person may not be desirable to another,
also what is thought desirable before the move may not remain or turn out
to be desirable after the move has been completed because the realized

benefits may not be as great as those anticipated. Considerable backflow

may, therefore, occur so that "rates of in-migration and out-migration in

any community tend not to be independent of each other" (Bogue, 1959,

p. 502).

It seems that there is a vast array of reasons causing persons

to migrate, and Bogue (1959, p. 499) says "Reasons for migration are not

necessarily known to the migrant, and his rationalization of his move may

not be valid or logical...." A person's whole economic, social and person-

al position in the place of origin must be considered.

The models put forward to elucidate migration patterns fall

into two main groups: (a) Deductive models, and (b) Inductive models.

A further subdivision may be made into the earlier deterministic type of

model, in which the phenomenon was thought to be wholly or partly explained

by one or more variables, and the later probabilistic type of model into

which the uncertainty principle, by way of random or probable patterns of

behavior, is incorporated. In the latter type of model the degree of

explanation of the dependent variable in the independent variable is

determined on the basis of probability theory and only partial explana-

tion, within known limits, is expected.

Many of the earlier models considered man as being a completely

rational being in whom economic motivation was thought to be of prime

importance. Such models stated that people migrate in order to raise their

level of income and that migrations are a means of achieving a state of

spatial income equilibrium. Although many of these earlier considerations

are still held to be valid, by themselves they are rather naive for several

reasons: (a) the emotive or programmed content of human behavior is

ignored or underestimated, (b) the concept of man as an individual moti-

vated purely by economics relies upon that individual having complete knowledge of his present and future alternative environments, and (c) the individual's perception of his present and future alternative environments is understated by grouping people like commodities, whereas "in migration, the agent being transported is itself active and generates its own flow" (Wolpert, 1965, p. 161). Migration is not, therefore, explainable to any great degree by economically rational reasons but is the observable effect of a great complex of behavioral and spatial causes.

Numerous studies of migration have been made, each placing emphasis on a different main variable. No attempt will be made here to summarize all the literature as it is covered adequately by Hagerstrand (1957), Olsson (1965), and Morrill (1965). Articles since the latter date have shown an emphasis on behavioral characteristics of migration. Gerger (1966) was concerned with illustrating certain points of the migrant's situation before and after displacement and Wolpert (1965) studied the behavioral aspects of the decision to migrate. Berry and Schwind (1969) concern themselves with the study of migration flows as effected by the migrant's information about the place of destination.

II. MIGRATION VARIABLES USED IN THE STUDY

Migration can be defined as a residential movement of a person or group, P, from one point, i, to another point, j. Therefore, as Olsson (1965) points out "the basic elements in migration can be restricted to the migrant himself and the two points." The migration between two points becomes a function of the point of origin, the point of destination and the migrant or group of migrants. Thus, if the migration between I and j is denoted by $M$, then $M = f(i, j, P)$.

Most of the studies of migration have been confined to the study of only part of this function so that the places of origin or destination, or both, have often been studied with the migrant himself and his behavior being ignored; studies based on the gravity model fall into this category.  On the other hand, many demographers and sociologists have ignored or underemphasized the places.  There are, however, a few studies which have considered the whole function with all the variables being taken into account.  Studies by Morrill (1965), Lovgren (1956), and Olsson (1965) fall into this category and although such studies present the greatest problems because they try to cover so many facets of migration, they were used as the main guide in the selection of variables to be used in the present study.

There are numerous variables or factors which have a bearing on migratory behavior and these can be divided into two groups:  micro-variables which are peculiar to the migrant household, and macro-variables which affect the community at large, for example the level of economic activity.  The questionnaire (discussed in Chapter III) sought data on the former factors while the published and unpublished data provided information on the latter factors.

## Selected Variables

(a) Distance over which migration occurs.

(b) Characteristics of the places of origin and destination.

(c) Individual characteristics of the migrant or migrant household.

(a) _Distance_.  There are numerous opinions on how migration distance should be measured.  Some studies support the argument that physical distance should be replaced by a new but vague concept of

"functional", "economic" or "perceptual" distance and Olsson (1965)
utilized a system of areas of "standardized intervening population" so
that each area had approximately the same 'absorptive effect' on migrants
and, therefore, each area could be counted as one functional distance unit;
migration distance was measured by the number of units crossed. Stouffer
(1960) formulated an hypothesis of intervening opportunities which sought
to replace absolute distance, between the point of origin and destination
of a migrant, with a measure of the number of alternative intervening
social or employment opportunities. Strodbeck (1960), however, tested the
intervening opportunity model and the gravity model, in which distance is
measured absolutely, and found rank correlation coefficients of 0.91 and
0.87 respectively for the correlation of the expected and observable
number of migrations from Kentucky, suggesting that neither measure is
superior to the other. Furthermore, Anderson (1965) compared Stouffer's
model with Zipf's (1946) model and found that distance defined in terms
of intervening opportunity is not superior to distance in terms of highway
mileage. The author, therefore, took highway mileage as the measure of
distance for moves to the County from other places.

The distance over which a move occurred within the County is
measured by the straight line distance between the point of origin and
destination. Although the actual distance travelled will vary according to
the road pattern, the vast majority of roads are at right angles to each
other so that the degree of correlation between straight-line and road dis-
tance is very high. Sitwell (1968) found that the road distance had a cor-
relation of 0.985 with the straight-line distance. Finally, the effect of
earth curvature is negligible as the maximum distance over which migrants
travelled in the County was only 45 miles and 93 percent of the distances
travelled were less than 30 miles.

Distance is used as an independent variable when discussing the rate of flow of migrants and as a dependent variable when relating the distance travelled to the attributes of the migrant.

(b) <u>Characteristics of places of origin and destination</u>. Data on these characteristics came from the Dominion Bureau of Statistics 'print-outs' of data by enumeration areas and includes:

   i.   Population change — 1956 to 1961, and 1961 to 1966.

  ii.   Percent farm and non-farm population for 1961 and 1966.

 iii.   1961 average wage earnings.

  iv.   Education level — the number of people in 1961 with over three years of high school education.

   v.   The number of people in the 25 to 64 year age group for 1961 and 1966.

  vi.   Total population 1956, 1961, 1966.

 vii.   Mean age for 1961, 1966.

(c) <u>Individual characteristics of the migrant or migrant house-hold</u>. Information about the migrant household was obtained by questionnaire which included questions on:

   i.   The marital status of the migrant (head of migrant household).

  ii.   The size of the migrant family.

 iii.   The age of the migrant.

  iv.   The birth place of the migrant, if in the County, otherwise the year of the move to, and the location of the first home in, the County.

   v.  The number of moves since 1956 and the years of moving.

  vi.  Whether or not the migrant had arranged employment or accommodation prior to the move.

vii. The main reason or reasons for moving.

viii. The manner in which the migrant group received information about the place of destination.

ix. The occupation of the migrant.

x. The type of industry that the migrant was employed by.

xi. The personal income of the migrant and spouse.

xii. The education of the migrant and spouse.

xiii. Whether or not the migrant had ever been a farmer and his reasons for leaving the farm.

xiv. Future intentions of the migrant and family.

Not all of these variables were used in the analysis but they did provide a depth of knowledge about the attitudes and behavior of the migrant group. All of the variables were selected because they were thought to be of significance in migratory behavior; the reasons for selecting the major variables are implied in the statement of objectives below.

III. OBJECTIVES OF THE STUDY

The objectives of the study are to describe and analyze the population migration to and within the County of Grande Prairie and to test a number of hypotheses associated with migration. The hypotheses are stated in the terms of the selected variables and suggest some of the reasons for the migratory movements both to, and within, the County.

Several hypotheses are tested:

I. A. The number of migrants moving between two points is:

i. negatively related to the distance separating the point of origin and destination;

ii. positively related to the population in both the area of origin

and the area of destination.

Both of these hypotheses are drawn directly from Reilly (1929)

who used Newton's gravity equation and first formulated the 'gravitational

model' for describing the interaction between two population centres.

I. B.  The number of migrants moving between two points is positively

related to:

i. the level of income in the area of destination;

ii. the general level of education in the area of destination;

iii. the size of the employed labour force in the area of destin-

ation (measured by the population in the 25-64 year old group);

iv. the rate of population increase, during the previous period, in

the place of destination.

Hypotheses Bi, Bii, and Biii are similar in that they all reflect

the principle of the availability of opportunities at the place of destin-

ation and to that extent are attributable to Stouffer (1940, p. 846) who

said "The number of persons going a given distance is directly proportional

to the number of opportunities at that distance ...." Olsson (1965, pp. 10-12)

tested hypotheses Bi (above) and Bogue et al (1957, pp. 71-72) found that

the rate of in-migration to, and net migration gain of, a metropolitan sub-

region varied directly with the education level at the place of destination

(Bii above).

The writer also thought that the percentage population change in

the previous period could be a significant factor affecting the rate of

population migration.  The variable was thought to be an additional measure

of the opportunity at the place of destination.

2. A.   The length of a migratory movement is:

    i. positively related to the education level of the migrant;

    ii. positively related to the income of the migrant.

These hypotheses are similar. Hagerstrand (1967, p. 116) verified that migration distances vary with the education level of the migrant so that people with the highest education usually make the longest moves. Olsson (1965, p. 15) replaced the migrant's education with the migrant's income. Furthermore, Wolpert (1965, p. 165) mentions formal education as one of the factors which shapes an individual's "action space" and is cognizant of the "congruity and interdependence of the effects of ... family income, education and occupation ...." Education increases a person's possible choices among alternative courses of action and also makes a person more aware of those alternatives both at the initial location and any alternative future locations. The migrant household's income is similarly important for it is the income which facilitates the actual move.

2. B.   The length of a migratory movement is negatively related to the age of the migrant.

Olsson (1965, p. 12) who tests this hypothesis says "it is well known that migration intensity is a function of age." Migration involves search or exploratory behavior and these attributes are more prevalent in young rather than old adults. Young adults also have less community ties and are frequently working up the 'social ladder' so that movement is easier and more necessary.

2. C.   The length of a migratory movement is negatively related to the size of the migrant household.

The author reasoned that the larger any particular household the more difficult it would be for that household to migrate.

3. A.   The probability of a household migrating is related to the occupation of the head of the migrant household so that migration probability is job-selective.

Kariel (1963) tested several factors associated areally with population growth due to net migration.  One of these factors was the proportion of the total labour force made up by professional, technical and kindred workers.  This hypothesis is obviously related to 2i and 2ii (above) insofar as the occupation of any employed person is directly related to that person's education or training, and a person's income is related to his/her education.  The professional and technical group are thought to be more mobile because these people have greater job opportunities and, therefore, have more alternative courses of action available to them.  Furthermore, through the contacts and publications within their own organizations these people are usually aware of the opportunities at different locations.

3. B.   The probability of a household migrating is related positively to the occurrence of a friend or relative of the migrant, in the area of destination.

Gerger (1966, p. 93) mentions the importance of a migrant having contacts in the place of destination.  A migrant will tend to select that alternative which minimizes uncertainty and to that extent the personal experience of friends or relatives, especially those living at any potential future location, is important in providing information to a potential and then actual migrant.  Furthermore, the feedback of information is

important and uncertainty is reduced if a migrant follows the course of action of a prior migrant with whom he is familiar (Wolpert, 1965, p. 166).

The results of the tests of each of these hypotheses are included in Chapter IV.

CHAPTER III

METHODOLOGY

The study was confined to the County of Grande Prairie because,
as mentioned in Chapter I, the County is not only defined well but its
physical size and population were thought to be manageable for a study
of this nature. Data on the movement and migration of people, especially
within such a small area, is not available from any published or unpub-
lished sources. Hence, the only way to obtain information on the migration
of people, and the reasons for that migration, was to interview the resi-
dents of the area. A random sample of County residents, therefore, forms
the basis of the largest part of this study.

I. THE SAMPLE

The author thought initially that a sample of 200 persons would
provide sufficient accuracy in sampling but approximately 800 were finally
selected in order to reduce the random sampling error[1] and also to ensure
that sufficient movers would be included in the sample to make the study
worthwhile.

The interviewees were selected at random from lists of house-
holders. The names of all householders in the rural areas, villages and
towns of the County are contained in the relevant Post Office Householder

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[1] The random sampling error, or standard error, is proportional
to the square root of the number of observations, hence the sample size
must be quadrupled if accuracy is to be doubled. See Gregory (1964,
pp. 102-112).

Directory[2], with householders being listed under the Post Office which serves them. However, at the time of the survey the Directory was one year old, hence each postmaster was asked to update the list of his customers by adding or deleting names where necessary. No directory (post office or commercial) was available for Grande Prairie; however, the author was fortunate in that the postmen of that city had just compiled a list of all postal addresses by postal walks in order to support a claim for increased wages. As the postal-walk-lists were made up of postal addresses and not merely street numbers all receivers of mail were listed separately so that each dwelling unit (e.g. apartment) was listed separately. Thus, the postal-walk-lists, together with lists of private box holders and householders on the two rural routes served from Grande Prairie, formed the basis of the sample for the City and the immediate rural areas. All settlements with post offices are shown on Map 3.

From the lists of householders a random sample stratified by area and with a constant sampling fraction of fifteen percent was selected for all the towns, villages and rural areas. A ten percent random sample was taken of the population of Grande Prairie as the writer forecast correctly that a greater response could be expected from the City population.

The study area was stratified so that a more even coverage would be obtained than might have been possible with a simple random sample. Stratified sampling can be used to improve the efficiency of the sampling design so that the standard error of the mean of the strafified random sample is frequently less than that of the simple random sample (Blalock,

_____

[2]The Householder Directory was selected over the Telephone Directory because many people, especially in the more isolated rural areas, do not have a telephone. The Telephone Directory does not, therefore, list 100 percent of the population.
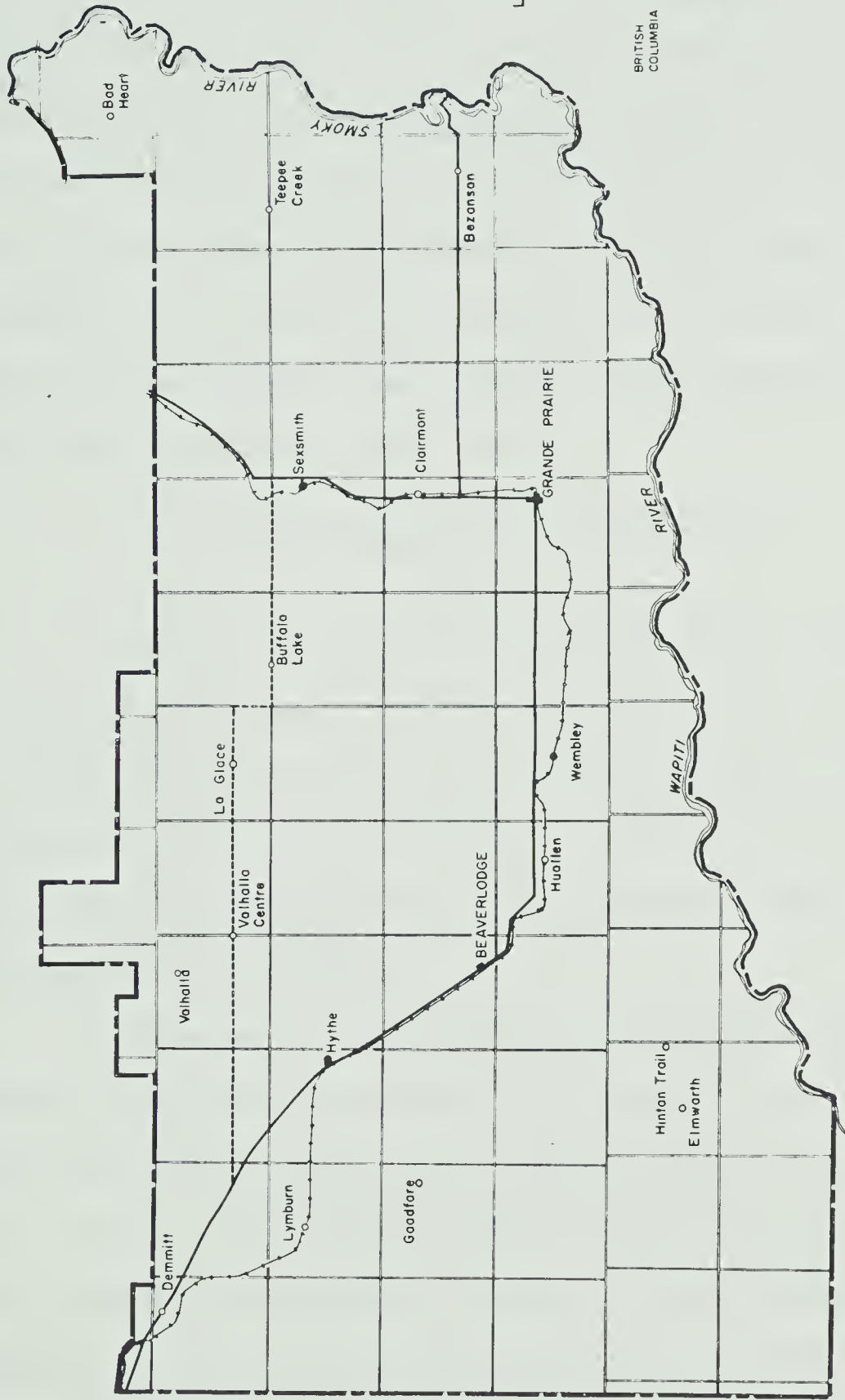
SETTLEMENTS
WITH POST OFFICES

COUNTY OF GRANDE PRAIRIE

LOCATION, COUNTY OF
GRANDE PRAIRIE

LEGEND

HIGHWAYS

RAILWAY

COUNTY BOUNDARY

TOWN

VILLAGE

HAMLETS

SOURCE Dep't of Mines & Technical Surveys, 1963

P. J. M  August, 1968

3

1960, p. 399). Although such a procedure may not be worthwhile unless the standard error is appreciably smaller, (Karmel, 1963, p. 139) and in a large sample chance factors alone would assure approximately the correct proportions from each stratum, there is little to lose by stratified sampling (Blalock, 1960, p. 399). It was, therefore, thought best to use those techniques likely to give more dependable results. The strata were determined on the basis of the areas served by each post office so that there were ten strata, each of the large post offices forming one stratum with the smaller post offices being aggregated so that there were always at least 200 householders in each stratum. Thus 756 householders in the County were selected for interviewing.

## II. THE QUESTIONNAIRE AND INTERVIEWING

Although the questionnaire (see Appendix I) could perhaps be revised even more than it has been already, it did provide a simple format for the questions and did have the benefit of being reasonably precise and yet at the same time inoffensive. Furthermore, the information required was elicited and the high percentage of replies is indicative of the questionnaire's success.

The selected householders were contacted in three ways: by personal interviews, by telephone, and by mail. As the post-walk-lists for Grande Prairie showed only postal addresses and not names, all those households selected within the City were contacted personally. The Town of Beaverlodge and the villages of Sexsmith, Hythe, and Wembley were also canvassed personally where possible and also by telephone. The remainder of the selected households were interviewed by telephone where possible and otherwise by mailed questionnaire. Where no contact was made, with a

selected household, after three phone calls or personal visits, a question-
naire with covering letter and stamped-addressed envelope was left or
mailed.  Questionnaires were only mailed when contact had not been made in
either of the other ways.  Thus, 220 questionnaires were mailed or left at
interviewee's residences.

Where a respondent replied that no member of his/her household
had changed residence from one urban or rural area to another urban or
rural area since June 1956, no questionnaire was completed; the negative
reply being merely recorded.  When one or more members of the household
had migrated, all questions were asked and the replies recorded.  A
questionnaire was completed for each household head or person who was or
had been independent and who had migrated at any stage from June 1956 to
June 1967.

The field survey was conducted in June and July of 1967.  For
economic reasons those who had already left the County could not be
interviewed, which is to be regretted since a comparison between those
migrants who left the County and those who remained in it may have
revealed some interesting results; also, the number of out-migrants from
the County can only be estimated.  Those interviewed fully were, there-
fore, migrants within, and to, the County who had migrated since June 1956
and who were still resident in the County in June and July of 1967.

III.  THE RESPONSE TO THE QUESTIONNAIRE

The high response (96 percent of householders selected for samp-
ling) for Grande Prairie is indicative of the reliability of personal (face-
to-face) interviewing.  The returns from selected people in Beaverlodge, Sexsmith,
Hythe and Wembley which were interviewed personally and by telephone were

lower than those for the City, with between 66 and 83 percent of those sampled replying. The response from the remainder of the County — in which the people were interviewed by telephone or mailed questionnaire — ranged from 51 to 74 percent; 51 percent being the lowest response and from the most isolated area of the County. Only 26 percent of the mailed questionnaires were returned but it seems that a response of this magnitude is all that can be expected from mailed questionnaires.

The overall response was good with a total of 544 or 72.2 percent reliable replies. The rate of reply varied spatially, however, so that it was highest in the urban areas and lowest in the most isolated portions of the County. As there was a net population loss from 1956 to 1966 in all of the more isolated parts of the County, it is thought that few new residents would be present, so that although the response is biased against the isolated areas, the lack of, or slow rate of, in-migration, and hence the low probability of a move occurring, is such that the validity of the study should not be unduly affected. Moreover, a chi-square test comparing the spatial distribution of households with the spatial distribution of replies to the questionnaire revealed no significant difference between the expected probability of reply and the observed probability of reply[3]. The pattern of response related directly to the actual pattern of distribution of households so that the sample can be considered accurate insofar as it is truly random.

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[3]A chi-square value of 10.10 was obtained with 36 degrees of freedom. See Appendix II for a fuller explanation.

## IV.  THE METHOD OF ANALYSIS

All the data was coded and transferred from the questionnaires to punched cards which were sorted so that frequency tables could be obtained.  The most important migration variables, namely: age, income and education of the prime mover, family size, distance moved and the number of movers, which could be meaningfully quantified, were slected and subjected to further analysis.  Regression and simple correlation analysis was applied to the data, using "canned" programmes in the Fortran IV language on the University of Alberta's I.B.M. 360/68 computer.  In addition to this "total analysis" of the individual sets of data, analysis of data aggregates was carried out by the use of the APL language for which purpose the data was aggregated into 15 subregions as shown on Map 4; the subregions are based on enumeration area boundaries (Canada, D.B.S., 1966).  Although there are thirty-seven enumeration areas in the County, these were grouped into the fifteen subregions shown.  Stepwise regression was used to determine significant relationships between and among the variables[4].  The probability of a move from one subregion to another was also determined, the result being shown in a matrix which was to be used as the basis of a predictive model of probable population distribution.

The distance over which migrations occurred within the County was measured by programming the computer to "read-off" point locations according to an algebraic grid.  Thus, the computer "measured" the algebraic straight-line distance, $d_{ij}$, between two co-ordinates, i at the point of origin and j at the point of destination, of any migratory movement.

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[4]See Appendix III for an explanation of Stepwise Regression.

4
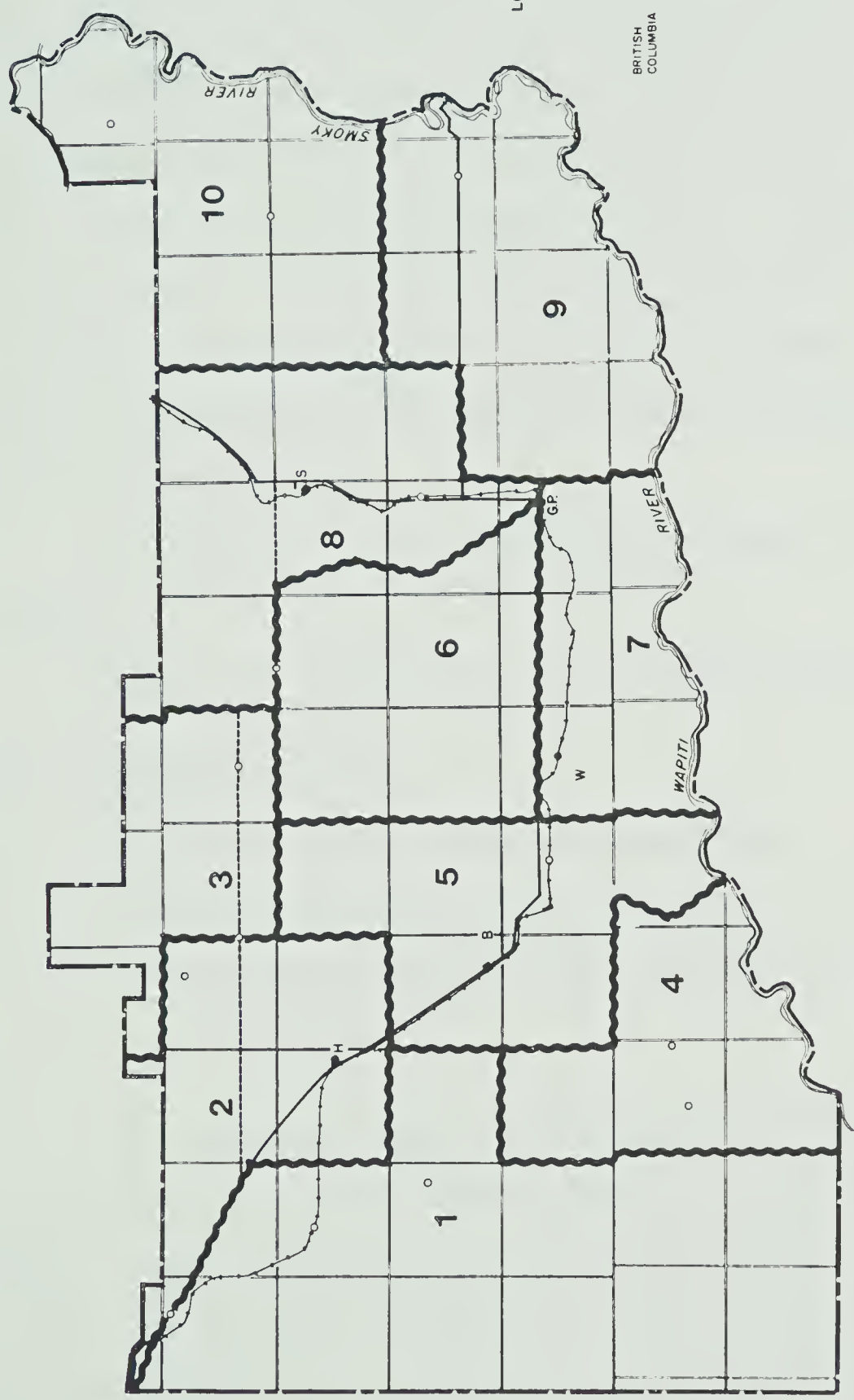
N

LOCATION, COUNTY OF
GRANDÉ PRAIRIE

BRITISH
COLUMBIA

N W T

ALBERTA

SASK

Edmonton

Calgary

U S A

SMOKY          RIVER

10

9

8

S

6

GP.

RIVER

7

W

WAPITI

3

5

B

2

H

4

1

L E G E N D

HIGHWAYS

RAILWAY

COUNTY BOUNDARY

TOWN

VILLAGE

HAMLETS

SUBREGIONAL BOUNDARIES

2    SUBREGIONAL NUMBERS

H    HYTHE    SUBREGION

B    BEAVERLODGE SUBREGION

W    WEMBLEY SUBREGION

S    SEXSMITH SUBREGION

GP    GRANDE PRAIRIE SUBREGION

P J M   August, 1968

SOURCE  D B S  Census, 1966  8  Dep't of Mines & Technical Surveys, 1963

STUDY SUBREGIONS

Miles  5          5  Miles

COUNTY OF GRANDE PRAIRIE

All points of origin and destination were known to within one mile, the points being specified by the appropriate section in the grid-survey and coded on the basis of a co-ordinate system.

Net-migration rates were calculated (from D.B.S. data) for the fifteen study subregions so that the differential pattern of population mobility would be revealed and so that it would be possible to check on the population redistribution calculated from the results of the question-naire. The latter aim proved impossible to meet. Although the net-migra-tion figures calculated from the D.B.S. data are probably fairly accurate, the out-migration from the County is necessarily unknown. Thus there is no way of ascertaining the net migration rates calculated on the basis of the questionnaire replies.

Net migration (D.B.S. data) was calculated by using the following equation:

$$M = P_1 - P_0 - \sum_0^1 (B-D) \ldots \ldots (1) \text{ (Bogue, 1955, p. 15),}$$

where    M = net migration,

P$_1$ = population at the terminal census year,

P$_0$ = population at the initial census year,

B-D = natural increase (births minus deaths) over

the period.

Unfortunately, however, neither births nor deaths were available by enumeration area so that it was necessary to calculate both sets of figures. Knowing the population by sex and age groups by enumeration areas for 1956, 1961 and 1966, the number of births and deaths for each age group was calculated from the province-wide birth and death rates (Alberta, Dept. Public Health and Vital Stats., 1966, p. 49 and pp. 164-165) which were then

adjusted for the local variation as expressed by the respective vital

statistics of the Grande Prairie Health Unit (Pers. comm. Director,

Grande Prairie Health Unit)[5].

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[5] See Appendix IV for a more detailed description of the net migration calculation.

CHAPTER IV

THE HYPOTHESES TESTED

The chapter is divided into four sections, the first three

sections covering the different sets of hypotheses stated in Chapter II,

and the fourth dealing with other characteristics of the migrants. The

first section deals with migration intensity, the second with the dis-

tance over which migration occurs and the third with the probability of a

household migrating. Migrations to the County from other places in Alberta

and migrations within the County are compared where possible. The short-

distance and long-distance movements sometimes provide an interesting con-

trast.

I. THE MIGRATION INTENSITY

This section indicates the results of the tests applied to the

hypotheses stated in section I of Chapter II. An attempt is made to explain

the variation in the number of migrants according to certain characteris-

tics of the place to which migrants moved. The distance over which migra-

tion occurred is treated as an independent variable.

The analysis in this section first treats data which were aggre-

gated into the fifteen study subregions and then deals with the results

obtained directly from the questionnaire survey. Much of the former data

was obtained from D.B.S. sources and as 1961 was the year of the last com-

plete census, the number of migrants to each area refers to the calculated

in-migration and net-migration over the period 1961 to 1966. Stepwise

regression was applied to the aggregated data, while simple correlation

and regression was used for the data referring to individual migrants.

Table IV summarizes the results of the stepwise regression analysis. The table shows two regression calculations, one using in-migration calculated from the questionnaire survey returns, and the other using net-migration calculated from the D.B.S. data, as the dependent variable. The only other difference between the two analyses is that in one the labour force (as measured by the number of people in the twenty-five to sixty-four year age group)[1] is included as an independent variable.

Table IV demonstrates that for migration movements to locations within the County very few of the hypotheses are verified and doubt is thrown on others. Even the signs of some of the regression coefficients are not as postulated.

1. The number of migrants moving between two points is seen to be related positively, but not significantly, to the general level of education in the area of destination. Both regressions suggest that this variable may explain a high proportion of the variation in the dependent variable but, because of the very high standard errors, further research, with a much larger number of subregions, would be needed to determine whether or not the high degree of apparent explanation could be found other than merely by chance.

2. The number of migrants moving between two points is shown, suprisingly, to be related negatively to the level of income in the area of destination. The negative sign of both regressions, even though the coefficients are insignificant, suggests that motives other than those of an economic nature may be of significance. Moreover, in the regression using net-

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[1]Although the labour force participation rate should be applied to the population to obtain the probable size of the labour force, the participation rate varies spatially and is unknown for the County. The actual labour force must vary according to the number of people in the working age group.

TABLE IV

SUMMARY OF THE RESULTS OF THE STEPWISE REGRESSION ANALYSES[1]
(No. of Migrants as Dependent Variable)

| VARIABLE (REFERS TO PLACE OF DESTINATION) | REGRESSION COEFFICIENT | PROPORTION OF VARIATION EXPLAINED |
|---|---|---|
| No. Persons not now in school with over 3 year's high school education (1961) | $0.0961^2$ $1.2100^3$ | $0.9960^2$ $0.9818^3$ |
| Mean wage earnings (1961) | $-0.0301^2$ $-0.1075^3$ | $0.0000^2_3$ $0.0027^3$ |
| % Population change (1956 -- '61) | $-1.1900^2_3$ $-1.7230^3$ | $0.0002^2_3$ $0.0008^3$ |
| Total Population (1961) | $0.6000^{2*}$ $-0.1280^3$ | $0.0003^2_3$ $0.0000^3$ |
| No. persons 25 to 64 years old (1961) | $0.3081^3$ | $0.0035^3$ |
| TOTAL variation accounted for | | $0.9966^2$ $0.9892^3$ |

[1] Appendix V contains the complete regression tables.

[2] No. migrants to the area, calculated from questionnaires.

[3] Net-migration in the area, calculated from D.B.S. data.

* Significant at 5% level.

(Significance tested by variance analysis (Ezekiel & Fox, 1967, pp. 395-405) using the computed 'T' & 'F' values)

migration as the dependent variable, the sign of the coefficient will probably be negative in over ninety-six percent of such samples.

3. The rate of population change in the previous period in an area is shown to be of no significance in explaining the number of migrants to that area. The negative sign is interesting, however, and may reflect the fact that rates of out-migration and in-migration are not independent of each other (Bogue, 1959, p. 502). Furthermore, the sign of the coefficient will probably be negative in over eighty-one percent of the cases. The rate of population decline of an area is obviously related to the rate of out-migration from that area.

4a. The number of migrants moving between two points is probably related positively to the total population in the area of destination. One of the regression coefficients is significant and positive in sign, while the other is insignificant and negative. The large standard error for the negative, and insignificant coefficient, indicates that the negative sign occurred merely by chance. The positive regression coefficient of 0.6 magnitude is, however, significant at the five percent level.

4b. Table XIII, in Chapter V, shows that the larger places, in the County at least, do not have greater relative importance as origins of migrants than do the smaller places. Thus, the hypothesis that the number of migrants moving between two points is related positively to the population in the area of origin is thrown into doubt. There were a large number of migrants to the County from Edmonton and Calgary (28 and 18 respectively) but the proportion of migrants from these two cities was less than the proportion of the provincial population resident in them. The proportion of

migrants from other parts of the Province is, therefore, greater than the proportion of the provincial population resident in these places. The size of the population at the place of origin appears to be of little significance in affecting the incidence of migration from the place or origin.

5. The number of migrants moving between two points is positively, but not significantly, related to the number of persons in the twenty-five to sixty-four year-old age group.

In the cases (1) to (5), above, where no significant relationship between the dependent and independent variable was found, the explanation lies in the large standard errors of estimate which are due probably to the small number of subregions in this particular part of the analysis.

6. There remains one hypothesis in this section to be tested, namely, that the number of migrants moving between two points is negatively related to the distance separating the point of origin and destination.

Correlation and regression analysis of the number of migrants versus the distance over which migration occurred revealed values of -0.01984 and -0.00002, respectively for migratory moves within the County, and 0.12036 and 0.00421, for moves to the County from other places in Alberta. The data here refer to the results of the questionnaire survey and the analysis has considered all the moves of respondents who migrated during the study period.

The coefficients for the migratory moves within the County are significant at the five percent level, but those for migrations to the County are completely insignificant. Moreover, the negative sign for the

migrations internal to the County is as postulated and distance is seen to

be a significant factor affecting the frequency of short-distance moves.

The sign for the long-distance moves will probably be positive in over

eighty-five percent of such samples and may be explained by the large number

of migrants from Edmonton and Calgary.  A large number of families were

transferred to the County by the migrant's employer (33 migrants out

of 150 from Alberta replied that their main reason for migrating was

because of a transfer); to these people distance is obviously of  no rele-

vance.  Moves internal to the County on the other hand are based on a

private decision and no migrant household received assistance with the

removal expenses from his or her employer.

The low values of the regression coefficient may reflect the

mobility, technology and affluence of the residents of Alberta.  Hagerstrand

(1967, p. 118) suggests that differences in the effect of distance as a

barrier to movement may reflect real differences in the technology of one

area compared with another.

Figure 5 shows a scattergram of the relationship of the number

of migrants to the distance migrated.  There is no obvious trend-line

through the scatter but the clustering between the five and fifteen mile

distance would suggest that the line of best fit approaches an asymptotic

curve of the quadraditic type rather than a straight line.

None of the hypotheses stated in Chapter II are verified clearly

and only two of them: (a) the number of migrants moving between two points

is related positively to the population at the destination, and (b) the

number of migrants moving between two points is related negatively to the

distance between the point of origin and destination, are verified partially.
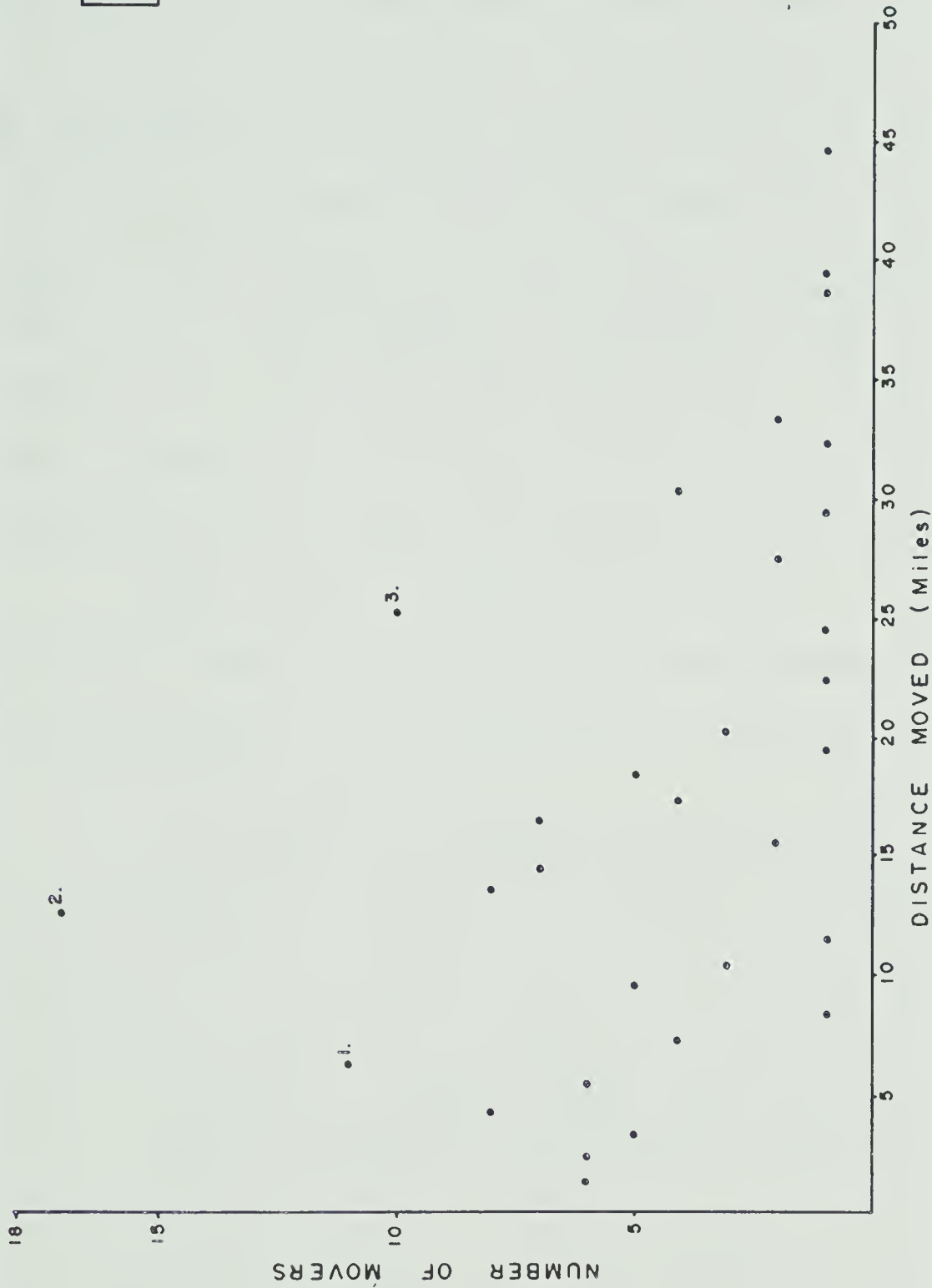
NUMBER OF MIGRANTS
RELATED TO
DISTANCE MIGRATED
(WITHIN THE COUNTY)

1. MIGRANTS BETWEEN GRANDE PRAIRIE & CLAIRMONT & VICE VERSA.
2. MIGRANTS BETWEEN GRANDE PRAIRIE & SEXSMITH & VICE VERSA.
3. MIGRANTS BETWEEN GRANDE PRAIRIE & BEAVERLODGE & VICE VERSA.

DISTANCE MOVED (Miles)

NUMBER OF MOVERS

5

## II. THE DISTANCE MIGRATED

The distance over which migratory movements occur is taken as the dependent variable and related to each of several other variables. All the data in this section refers to the results obtained directly from the questionnaire survey and, therefore, refers to the migrations of respondents over the period June 1956 to June 1967[2]. Correlation and regression analysis was used to ascertain the significance of the hypotheses in part 2 of the statement of hypotheses included in Chapter II. The results of the analysis are summarized in Table V, and the effect of distance on migratory moves within the County is compared with the effect of distance on migratory moves to the County from other places in Alberta.

Table V shows that most of the hypotheses in this section are verified, at least as far as the sign of the relationship is concerned, but only one set of the coefficients has a significant value.

I. The length of a migratory movement is shown to be positively, but not significantly, related to the income of the migrant. The sign is as postulated and has a probability of greater than 0.86 of being positive in any similar sample. It is interesting to note that the mean income level of the migrants is probably higher than that of the total County population. (The word 'probably' is important for the comparative data comes from the 1961 D.B.S. census. It may be that over the intervening six years from the 1961 census to the time of the field survey, real differences in the average income level were being revealed anyway.) Although the mean

---

[2]One hundred thirty-seven respondents migrated within the County and 150 migrated to the County from other places in Alberta.

## TABLE   V

## SUMMARY OF THE RESULTS OF THE CORRELATION

## AND REGRESSION ANALYSIS[1]

### (Migration Distance As Dependent Variable)

| VARIABLE | MIGRATIONS TO THE COUNTY FROM PLACES WITHIN ALBERTA | | MIGRATIONS WITHIN THE COUNTY | |
|---|---|---|---|---|
| (REFERS TO THE MIGRANT) | CORRELATION COEFFICIENT | REGRESSION COEFFICIENT | CORRELATION COEFFICIENT | REGRESSION COEFFICIENT |
| Income | 0.1395 | 14.5690 | 0.0169 | 0.9450 |
| Age | 0.0336 | 2.7612 | -0.2650** | -1.2547** |
| Education Level Completed | 0.989 | 5.8410 | -0.1180 | -0.5073 |
| Size of the Migrant House-hold | -0.0207 | -5.3300 | -0.0446 | -0.5092 |
| Multiple Correl-ation Coefficient (r) | r=0.1857 $r^2$=0.0345 | | r=0.4069** $r^2$=0.1655 | |

[1]Appendix V contains the complete regression tables and correlation matrices.

** Significant at 1% level.

(Significance tested by variance analysis (Ezekiel & Fox, 1967, pp. 395-405) using the computed 'T' & 'F' values)

income of all the wage earners in the County was $2,413 (in 1961) the mean income of migrants moving within the County was about $3,500 (in 1967) and that for migrants to the County from other places in Alberta was about $5,300 (in 1967). The difference in the mean income between the group of migrants moving within the County, and the group of migrants moving to the County, is marked, and probably reflects real differences in the comparative level of education[3].

The comparisons suggested that personal income is important in increasing the probability of a potential migrant becoming an actual migrant, but the data is insufficient to determine exactly whether personal income is a factor facilitating the move or is a factor attracting migrants to a particular area.

2. The length of a migratory movement is related significantly and negatively to the age of the migrant for moves within the County; the negative sign is as postulated. The positive sign for migrations to the County poses a problem even though the regression coefficient does not have a significant value. The positive sign may be explained in the same way that the difference in signs for the number of migrants versus the distance relationship was explained. The large number (22 percent) of migrants who were transferred to the County by their employers, and to whom the distance migrated is, therefore, of no consequence, may explain this positive sign. On the other hand, there is a probability of nearly 0.36 that the sign, for the distance/age relationship for moves to the County from Alberta, would be found to be negative with a similar sample. Another

[3]Correlation coefficients of 0.304 and 0.346 for the correlation of migrant-income against migrant-education, for movers within and to the County respectively, were significant at the 1% level.

explanation is that the age distribution differed between the two groups
of migrants so that the mean age of migrants moving within the County was
in the 40 to 44 year old group, while that for migrants to the County from
other places in Alberta was in the 30 to 34 year old group. The greater
age of the internal migrants is explained largely by the large number (30
percent) who moved in order to retire or because they were widowed just
prior to the move. Both of these groups moved only short distances because
they wished to stay near their friends or relatives, so that distance pre-
sented quite a psychological barrier to these people.

3. The length of a migratory movement is seen to be related
positively to the personal education of a migrant moving to the County from
Alberta, but related negatively to the personal education of a migrant
moving within the County. Neither of the regression coefficients is signi-
ficant. The positive sign is as postulated but the negative sign for
migrations within the County is difficult to explain. It may reflect simply
that many of the people who migrated within the County from rural to urban
areas for retirement had little formal education.

Although the relationship is not shown to be significant it is
interesting to note that the mean education level of the migrant group is
probably somewhat higher than that of the County population as a whole.
Similar emphasis on the word 'probably' applies as in (1) above. Whereas
the mean education level attained by the total population of the County
(of those not in school at the time of the 1961 census) in 1961 was grades
6 to 7, the mean education level for migrants moving within the County
was grades 9 to 10 (moves over the period 1956 to 1967) and the mean edu-
cational level for migrants moving to the Councy from other places in
Alberta was grades 11 to 12 (moves over the period 1956 to 1967). Moreover,

sixty percent of the migrants from other places in Alberta had completed
grade twelve matriculation or more, compared with only sixteen percent of
the migrants moving within the County. The comparative data suggests that
personal education is important in increasing a person's likelihood of
migrating and the insignificance of the regression coefficients suggest
further that once the decision to migrate has been made, the distance
over which the migration occurs is of very little significance and it does
not matter to the migrant whether the distance is short or long.

4. The length of a migratory movement is related negatively, but
not significantly to the size of the migrant household. The negative sign
is as postulated and will probably be negative in over seventy-three percent
of such samples. Therefore, the size of a household possibly has some
negative effect on the ease of migratory movements.

The lack of significance of many of the hypotheses suggests that
besides the reasons already stated, distance is really of little importance
as a barrier to movement in the Alberta setting. Furthermore, although the
multiple correlation of migrant income, age, education, and size of migrant
household against the distance migrated, is significant for moves within the
County, it is not significant for moves to the County. There may be numerous
subjective reasons for a person to change his place of residence and the
normally acceptable rational criteria of human movement may not warrant the
importance placed on them. Section four of this Chapter will present other
characteristics and motives of the migrants.

Distance too poses a problem, especially when considering migra-
tions from other places in Alberta. The pattern of movement is lineal,

from the south, rather than being normally distributed about the area of destination, and Edmonton and Calgary account for 36.5 percent of all the origins of migratory movements to the County from other places in Alberta. Olsson (1965, p. 20) says that

"Variations in individual migration distances can be fully understood only if the spacing of places is studied concomitantly; ... the relationships between spacing and migration distance become extremely intricate."

### III.    THE PROBABILITY OF A HOUSEHOLD MIGRATING

1.    The probability of a potential migrant becoming an actual migrant is associated with the occupation of the head of the migrant household so that the probability of migration is job selective.  The proportion of professional, trades and business personnel in the migrant group was found to be higher than the proportion for the County population as a whole.  Whereas this group occupied 33.4 percent of the labour force of the group of migrants moving within the County, the proportion reached 41.0 percent in the group from other places in Alberta and 36.7 percent for the group from all other places outside Alberta.  The proportion of the labour force of the total County population in this category comprised only 31.4 percent.  The figures not only show that there is a greater proportion of professional and kindred workers in the migrant group than in the total population, but suggest that job selectivity increases in importance for long distance moves.

2.    The probability of a household migrating is related clearly and positively to the occurrence of a friend or relative in the area of destination.

Table VI, below, summarizes the replies to questions about the importance of friends and relatives in influencing the decision to migrate. The table shows clearly that friends and relatives are very important in

TABLE VI

RESPONSES OF MIGRANTS TO QUESTIONS ABOUT THE IMPORTANCE

OF FRIENDS AND RELATIVES IN AFFECTING

THE DECISION TO MIGRATE

| QUESTION | MIGRANT FROM: | | |
|---|---|---|---|
| | WITHIN COUNTY | OTHER ALBERTA | OUTSIDE ALBERTA |
| | NUMBER OF RESPONSES | NUMBER OF RESPONSES | NUMBER OF RESPONSES |
| | YES    NO | YES    NO | YES    NO |
| Was your move preceded by a similar move of a friend or relative? | 4     133 | 29    122 | 26    42 |
| Percent Yes | 2.9 | 19.2 | 38.0 |
| How did you obtain information about the place you moved to?<br><br>(Percent friends and relatives) | 33.5 | 33.8 | 62.0 |
| What was the main reason for your migrating?<br><br>(Percent to be near friends or relatives) | 4.4 | 10.6 | 32.3 |

Source:  Field Survey, June and July, 1967.

affecting the decision to migrate.  The responses to each question show that

the importance of personal contacts increases with the distance from the

point of origin.  Wolpert (1965, p. 162) says that "the stream of information

is important in long distance migration — information about prospects must

somehow compensate for the absence of personal experience."

IV.   OTHER CHARACTERISTICS OF THE MIGRANTS

All the characteristics of the migrants are shown in Appendix VI but this section will elaborate briefly on some of the characteristics, especially those which seem to have bearing on the decision to migrate.

The characteristics considered here:

1.   The manner in which information about the place of destination was obtained by the migrant.

2.   Whether or not the migrant had employment or accommodation arranged prior to migrating.

3.   Whether or not the migrant intended to migrate again in the near future.

1. Wolpert (1965, p. 162) mentions the importance of information levels and how they affect the decision to migrate.  The table below summarizes the ways in which information about the place of destination was obtained.

TABLE   VII

SUMMARY OF THE WAYS IN WHICH INFORMATION ABOUT THE

DESTINATION WAS OBTAINED

| ORIGIN OF MIGRANT | NUMBER OF RESPONSES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | NEWS-PAPER | PRIVATE ARRANGE-MENT | RELA-TIVES | FRIENDS | LIVED NEARBY | SIMPLY TRANS-FERRED | OTHER | NO RESPONSE |
| Within County | 9 | 17 | 27 | 19 | 40 | 5 | 11 | 6 |
| Other Alberta | 12 | 22 | 33 | 18 | 1 | 35 | 13 | 15 |
| Outside Alberta | 3 | 2 | 33 | 9 | – | 10 | 6 | 1 |

The importance of personal contact with a relative or friend
was mentioned in Section III, above, and the table elaborates on this.
Sixty-six percent of all the migrants moved on the b sis of personal
contact with friends, relatives, future employer or simply because they
happened to live nearby and were therefore familiar with the destination.
The last group was composed mainly of people who migrated in order to
retire.

    2.   The incidence of job and accommodation arrangements before
migrating increased with the distance over which the migration occurred;
Table VIII, below, summarizes the data.  Again the importance of informa-
tion and security in order to reduce the chance of a 'bad move' (from the
point of view of disappointment or failure) is revealed especially by the
large proportion of migrants from outside Alberta who had arranged accom-
modation prior to migrating.

TABLE VIII

PERCENT RESPONDENTS WITH JOB OR ACCOMMODATION

ARRANGED BEFORE MIGRATING

| | PERCENT WITH PRIOR ARRANGEMENT | |
| --- | --- | --- |
| ORIGIN OF MIGRANT | JOB | ACCOMMODATION |
| Within County | 60.0 | 76.5 |
| Other Alberta | 75.0 | 57.5 |
| Outside Alberta | 60.0 | 72.0 |

The high percentage of prior job arrangements by migrants from
other places in Alberta reflects probably the high incidence of job

transfers within this group; the low percentage for the migrants moving within the County is probably due to the large proportion of retired people who migrated within the County.

3. The number of migrants expecting to migrate again in the near future was thought to reflect the disappointment about the initial destination. It was thought that the people intending to migrate again in the near future had not realized the benefits they had anticipated before their initial migration. Table IX summarizes the response to this question.

TABLE IX

THE INCIDENCE OF, AND REASONS FOR,

AN IMPENDING MIGRATION

| ORIGIN OF MIGRANT | REASONS FOR MIGRATING AGAIN | | | | |
|---|---|---|---|---|---|
| | (Number of Responses) | | | | (Percent) |
| | BETTER OPPOR- TUNITY | 'TO ESCAPE' | TRANSFER | OTHER | BETTER OPPOR- TUNITY AND ESCAPE AS % OF TOTAL INI- TIAL MIGRANTS |
| Within County | 7 | 2 | — | 4 | 6.6 |
| Other Alberta | 9 | 5 | 12 | 6 | 9.3 |
| Outside Alberta | 6 | 2 | 3 | 3 | 11.8 |

The proportion of disappointed migrants is seen to increase with the distance over which these migrants moved initially. Implicit in this increase of disappointment with distance is the fact that information about a potential destination decreased with distance so that the probability of a migrant not realizing the expected benefits of migrating increases with

the distance migrated. Of the fifty-nine migrants who had definite plans for an impending move, fifty-four indicated that they would be moving out of the County. Besides this group of people with definite plans to move, there were a large number of respondents who indicated a desire to move, especially to areas of better climate such as Vancouver or the Okanagan.

This chapter has shown the results of tests applied to some of the migration hypotheses and, although many of the results are not as expected, an attempt has been made to explain the reasons for the apparent deviations from the 'normal'. The next chapter will discuss the migration patterns observable within the County and the subregional population changes which are attributable to migration.

CHAPTER V

THE MIGRATION PATTERNS OBSERVABLE WITHIN THE COUNTY

The Chapter is divided into four sections: population change
due to net migration, the pattern of rural-urban moves, the pattern of
multiple moves, and the migratory movements among all the subregions
within the County.

I. NET MIGRATION

Rates of population change due to net-migration over the periods
1956 to 1961 and 1961 to 1966 are shown by study subregions in Figures
6 and 7 respectively, while the absolute population change due to net-
migration is shown in Appendix IV. During the period 1956 - '61 net-mi-
gration contributed sixty-five persons to the County population whilst in
the latter period the population increase attributable to net-migration
accounted for 1,097 persons. Although the County as a whole showed net-
migration gains in each period, many of the study subregions within the
County showed net-migration losses and the rates of gain or loss vary widely
throughout the County and for each time period. Net-migration is, therefore,
rapidly redistributing the population throughout the County. A comparison
of Figure 6 with Figure 7 reveals that only two places; Beaverlodge, a
town, and Grande Prairie, a city, consistently gained population by net-
migration during both periods.

Figure 6 shows that during the five years from 1956, six of the
fifteen study subregions had net-migration gains. Three of these subregions
were urban areas and while the other three subregions all encomposed rural
areas, they were adjacent to Grande Prairie. The four townships closest to

6

N

LOCATION, COUNTY OF
GRANDE PRAIRIE

10    5·8

9    11·8

8    4·4

S. 37·7

GP. 11·7

6    3·7

7    25

W. 1·4

3    15·4

5    16·4

H 14·6

B 3·5

2    12·1

1    25

4    3·8

L E G E N D

⬚ NET INCREASE     ⌇ RURAL SUBREGIONAL BOUNDARY

⫶ NET DECREASE     ) URBAN SUBREGIONAL BOUNDARY

14 % CHANGE     ‒ ‒ COUNTY BOUNDARY

SOURCE D.B.S Census 1956 & 1961

BRITISH COLUMBIA

NWT

ALBERTA

SASK

Edmonton

Calgary

USA

POPULATION CHANGE

DUE TO NET MIGRATION 1956-'61

Miles 5   0   5   Miles

COUNTY OF GRANDE PRAIRIE

P.J.M  August, 1968

7
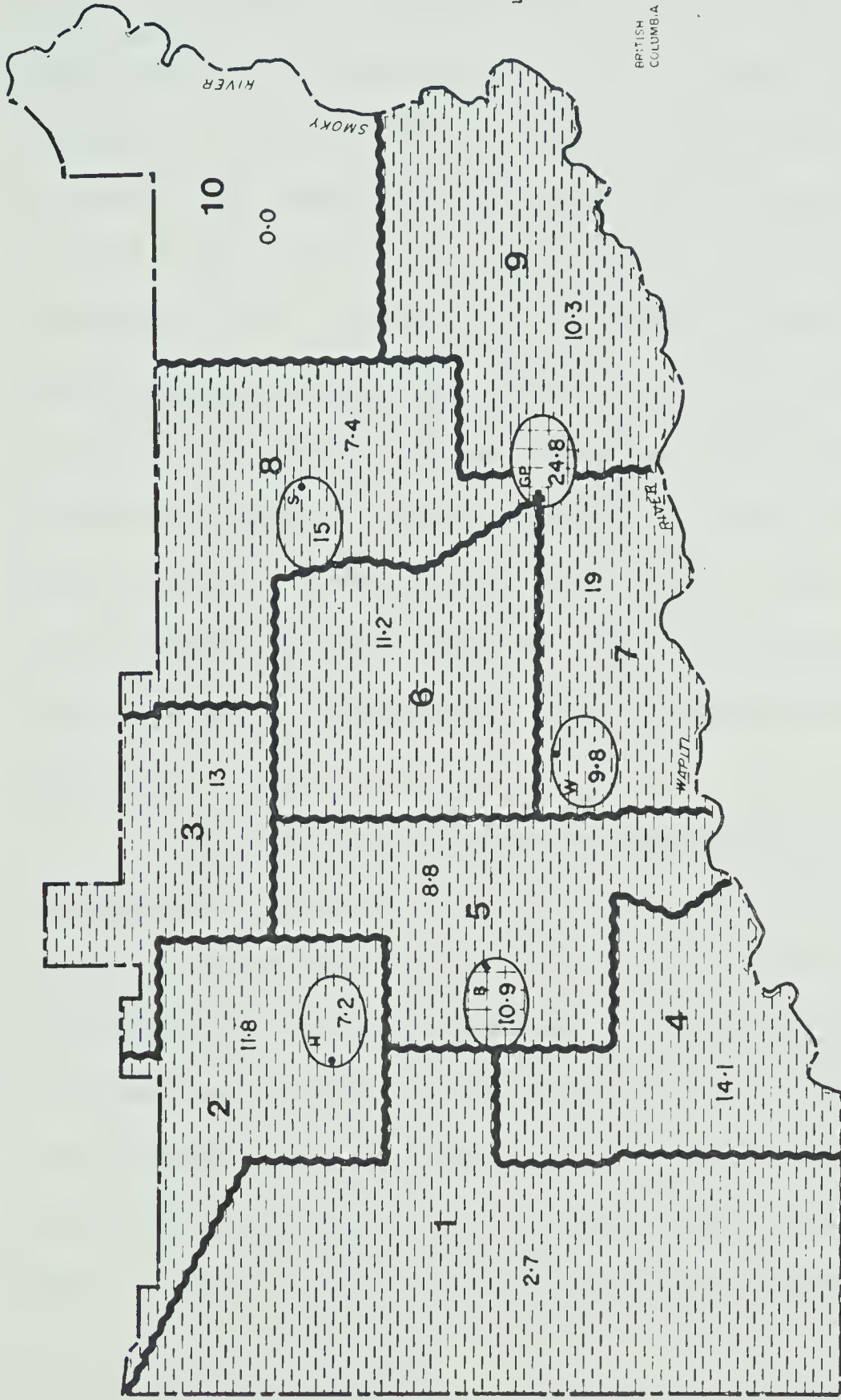
LEGEND

NET INCREASE

NET DECREASE

14    % CHANGE

RURAL SUBREGIONAL BOUNDARY

URBAN SUBREGIONAL BOUNDARY

COUNTY BOUNDARY

SOURCE D B S Census 1961 8 1966

POPULATION CHANGE
DUE TO NET MIGRATION 1961-'66

COUNTY OF GRANDE PRAIRIE

PJM August, 1968

LOCATION, COUNTY OF
GRANDE PRAIRIE

that city all registered large population gains over the five-year period

and may reflect a growing rural non-farm population.

In one of the subregions, subregion No. 8, the growth of the

hamlet of Clairmont, from 164 persons in 1956 to 292 persons in '61[1],

accounted for sixty-eight percent of all the population increase in the

subregion. Figure 7, however, shows a contrasting picture in that only

two subregions, Beaverlodge and Grande Prairie, had net-migration gains

over the period 1961 to '66. Furthermore, it is interesting to note

(see Appendix IV) that the total population increased in only two rural

subregions and two urban subregions over the latter period, and in five

rural subregions and four urban subregions in the former period. In the

case where a subregion shows net-migration losses simultaneously with an

absolute population decline, the net-migration loss exceeds even the

natural increase in the subregion. Thus in all but four subregions, over

the period 1961 to 1966, natural increase was exceeded by the net-migra-

tion loss.

The rural population losses, especially the losses through net-

migration, are thought to reflect three particular phenomena: (1) the

abandonment of small farms settled hastily on poor or marginal soils,

(2) farm labour-force adjustments with increasing agricultural mechaniz-

ation and the concomitant population decline as the average size of farm

holding tends to become larger, and (3) the preference of retiring farm-

folk to live in an urban area. The last reason is of the greatest import-

ance. Of the forty respondents who migrated, between 1956 and 1967 within

---

[1] Of the nine respondents who migrated to Clairmont over the
period 1956 to 1961, six migrated from Grande Prairie and of these four
did so because they preferred living in a hamlet or rural area rather than
"bustling" Grande Prairie, the place of their work.

the County, in order to retire[2], twenty-nine migrated from rural to urban

areas.  Only two migrated from an urban to a rural area.  Section II elab-

orates on rural-urban migration.

Net-migration losses from the rural subregions may reflect the

continuing trend toward the centralization of services in the largest

centres.  The central place function of all the small centres, as reflected

by retail sales figures, is declining, whereas retail sales in the two

largest centres have shown consistent increases.  The rural population

decline, in so far as these people were formerly located in the market

area  of the small central places, is obviously a large component explain-

ing the decrease in the retail sales of small centres.  Table X shows the

retail sales of the five urban subregions for each of four years, 1963 to

1967.

The table shows that only Wembley, Beaverlodge, and Grande Prairie

had consistent increases in total retail sales over the four-year period

and that the increase for Wembley is all but negligible.  Comparable retail

sales data were obtained for only one hamlet, Valhalla Centre, and its

total-annual retail sales declined consistently from $245,893 to $114,363

over the four-year period.  Table X further shows that whereas sales of

food, beverage and general merchandise increased over the four-year period

in all five centres, the decrease in the sales of automotive products gen-

erally offset any gains in the former category.  Sales of automotive products

in Sexsmith decreased from $511,360 in 1963 to $360,611 in 1966 and those for

Hythe decreased from $333,603 to $184,811 over the same period.  The magni-

tude of the decline in sales of automotive products suggests that farmers

---

[2]Thirty-two respondents gave retirement as the first reason,
while another eight indicated that retirement was the second main reason for
migrating.

TABLE  X

ANNUAL RETAIL SALES[1] IN SELECTED CENTRES

1963 - 1966[2]    ($000's)

| URBAN SUBREGION | GOODS BOUGHT | 1963 | 1964 | 1965 | 1966 |
|---|---|---|---|---|---|
| Hythe | Food etc. | 393.0 | 378.0 | 404.0 | 466.2 |
|  | Automotive | 333.6 | 296.4 | 201.8 | 184.8 |
|  | Total | 726.6 | 674.4 | 605.9 | 651.0 |
| Beaverlodge | Food etc. | 853.1 | 853.1 | 810.7 | 979.0 |
|  | Automotive | 824.2 | 944.0 | 1,074.2 | 1,073.5 |
|  | Total | 1,935.2 | 1,991.2 | 2,317.5 | 2,518.9 |
| Wembley | Food etc. | Confi-dential | N/A | N/A | N/A |
|  | Automotive |  | N/A | N/A | N/A |
|  | Total |  | 244.0 | 244.2 | 244.5 |
| Sexsmith | Food etc. | 266.7 | 313.3 | 394.7 | 559.2 |
|  | Automotive | 511.4 | 498.4 | 450.4 | 360.6 |
|  | Total | 981.5 | 811.6 | 845.1 | 919.8 |
| Grande Prairie | Food etc. | 4,470.0 | 6,606.8 | 7,317.0 | 8,410.4 |
|  | Automotive | 6,029.0 | 6,230.7 | 7,222.5 | 7,582.5 |
|  | Total | 14,548.9 | 16,929.4 | 20,004.0 | 22,670.4 |

[1]Source:  (Pers. Comm., J. F. Clancy, Alberta Bureau of Statistics, Edmonton, 1968).

[2]Retail trade statistics prior to 1963 were not compiled on a comparable basis.

N/A - Not available.

as well as local residents are obtaining their automotive products in the largest central places where they are offered the widest possible selection of product brands and prices.

The trend for all but the largest central places to decline in population is likely to continue as automobiles and highways are being constantly improved and as the local school board has a policy of centralizing school services so that the high school which was at Wembley in 1966/67 was moved to Beaverlodge for the 1967/68 year. Post Office functions too are being centralized and the Dimsdale Post Office, eight miles west of Grande Prairie, was closed in 1966 with the people now being served from Grande Prairie by a rural route.

## II. RURAL-URBAN MIGRATION

Rural-urban migration was mentioned in Section I (above), the aim here is simply to elaborate on the observed pattern of population redistribution through the migration of rural dwellers to the urban environment.

Rural-urban migrations accounted for 44.0 percent of all moves of respondents who migrated within the County over the period 1956 to 1967. The next largest groups of migrants within the County moved from urban areas to urban areas and urban areas to rural areas, each group containing about twenty percent of the migrations.

Figure 8 shows the pattern of rural-urban migration to the four urban subregions attracting rural people. Table XI, below, which summarizes the pattern of moves shown on Figure 8, reveals that twenty-nine of the fifty-nine rural-urban migrants moved to Grande Prairie and ten migrated to each of the other urban subregions shown. It is interesting

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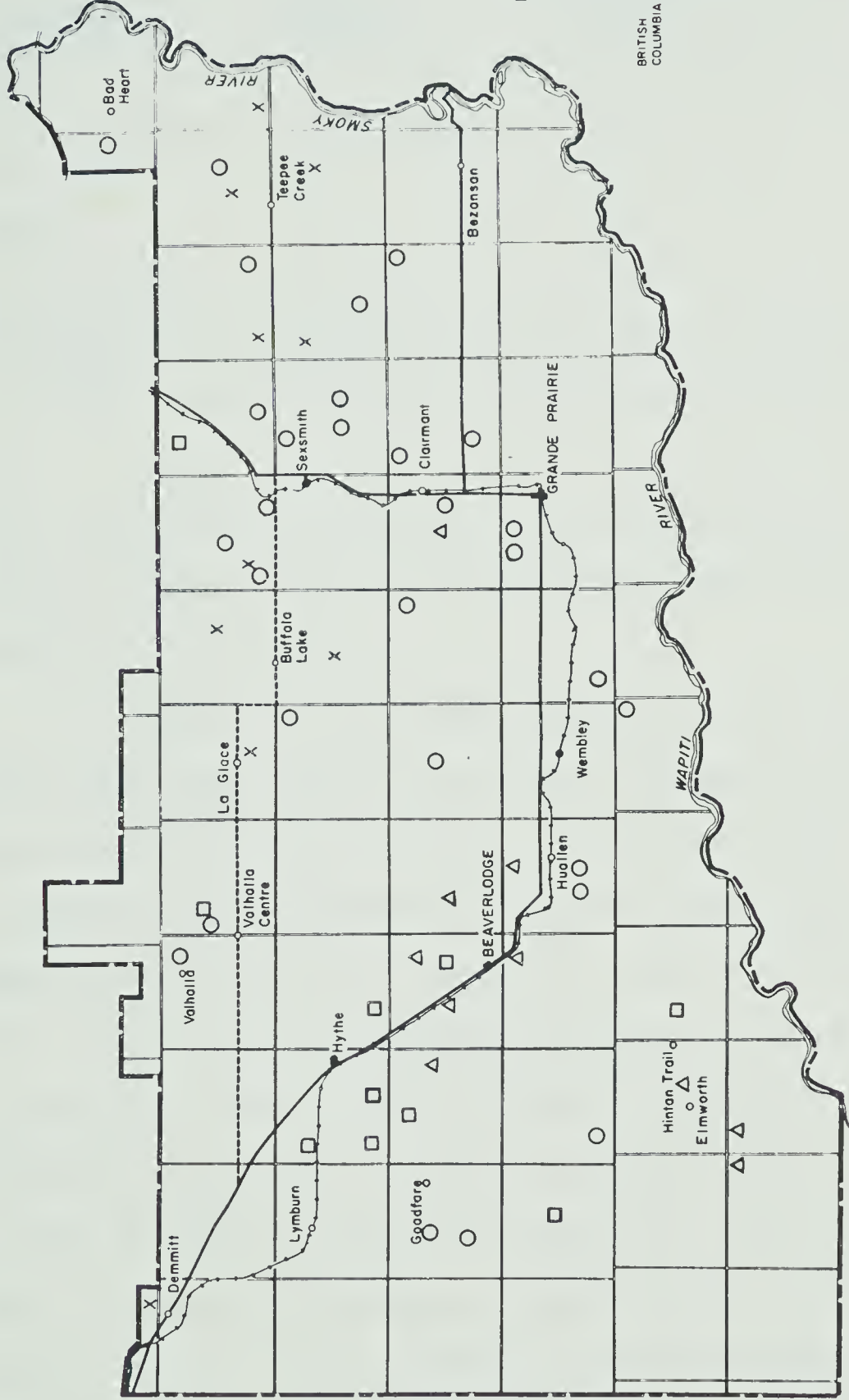
N

LOCATION, COUNTY OF
GRANDE PRAIRIE

NWT

SASK

ALBERTA

Edmonton

Calgary

BRITISH
COLUMBIA

USA

oBad
Heart

SMOKY

RIVER

Teepee
Creek

Bezanson

Sexsmith

Clairmont

GRANDE PRAIRIE

RIVER

Buffalo
Lake

Wembley

La Glace

WAPITI

Valhalla
Centre

Huallen

BEAVERLODGE

Valhalla

Hythe

Goodfare

Hinton Trail
Elmworth

Lymburn

Demmitt

RURAL-URBAN MIGRATION

1956 - 1967

(RESPONDENTS ONLY)

Miles 5    0    5 Miles

COUNTY OF GRANDE PRAIRIE

P. J. M    August, 1968

LEGEND

□  MOVE TO HYTHE

△  MOVE TO BEAVERLODGE

X  MOVE TO SEXSMITH

O  MOVE TO GRANDE PRAIRIE

HIGHWAYS

RAILWAY

COUNTY BOUNDARY

■  TOWN

●  VILLAGE

O  HAMLETS

SOURCE Dep't of Mines & Technical Surveys, 1963  & Field Survey

TABLE XI

SUMMARY OF THE PATTERN OF RURAL-URBAN MIGRATIONS

| DESTINATION | NUMBER MIGRANTS | MEAN DISTANCE MIGRATED (MILES) | MEDIAN DISTANCE MIGRATED (MILES) |
|---|---|---|---|
| Hythe | 10 | 10 | 6 |
| Beaverlodge | 10 | 12 | 12 |
| Sexsmith | 10 | 19 | 15 |
| Grande Prairie | 29 | 17 | 16 |
| TOTAL | 59 | | |

that no respondents indicated a migration from a rural area to Wembley and this probably reflects the smallness and declining central-place function of that village.

Three of the four urban subregions shown, attracted most people from nearby areas. The mean and median distances over which migrants moved from rural areas to each of the four urban centres were calculated and in all cases except for Beaverlodge the areal distribution is positively skewed towards the place of destination; that is the median distance travelled is less than the mean distance travelled. In the case of Beaverlodge the curve was 'normal' in that the mean and median coincided. It is also interesting to note that of the three skewed curves, that for Grande Prairie was least skewed and approximated closely the normal curve, while that for Hythe had the greatest skewness. The difference in the skewness of the curves of the rural-urban migration distances is thought, by the writer, to reflect real differences in migrant attitudes. The difference, as the skewness is least for the two largest centres and these were the only sub-

regions with consistent net-migration gains, suggests that once a rural migrant has to move more than a very short distance to an urban centre, he would rather move a much longer distance to a large urban centre.

The effect of distance as a barrier to migration was further tested by the use of the potential model. The equation:

$$M_{ij} = \frac{Pj}{D^a_{ij}} \quad ..... \quad (2)$$

was used, in which $M_{ij}$ is the number of migrants who moved from areas i to point j, $P_j$ is the population at point j, and $D_{ij}$ is the median distance migrated from areas i to point j. The exponent 'a' ranged from 0.47 to 0.70[3], and averaged 0.55, for the rural migrations to each of the four urban areas shown on Figure 8. Although further research must obviously be carried out, that the exponent of distance approaches 0.5, again emphasises that distance is only of limited importance as a barrier to migration in the Alberta setting. As has already been mentioned, Hagerstrand (1967, p. 118) explains the much lower exponents for distance, that have been found in North America compared with Europe, may be due to differences in the economics and technology of transportation and communication between the two continents.

Retirement was given as the reason for migrating to an urban area by twenty-nine of the fifty-nine respondents who migrated from a rural to an urban area. Seventeen respondents gave employment in the urban area as their main reason for migrating and just over half of these were young people in their early twenties. Family status change and familial dependency on another person each accounted for five of the migration

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[3] 'a' was obtained simply by transposing terms in equation (2). For example, if $M = P/D^a$, then $D^a = P/M$ and, a. log D = log P/M, therefore, $a = \frac{\log P/M}{\log D}$ .

reasons given. Of the fifty-nine rural-urban migrants forty-one indicated

that they had once been farmers. Separate tables for ex-farmers from

within the County and from other places in Alberta were not compiled but

as there were only nine ex-farmers from outside the County, Table XII,

below, which presents the reasons stated for leaving the farm, gives a

fairly accurate picture of the "push-effect" from the rural areas.

TABLE  XII

REASONS FOR LEAVING THE FARM

| REASON | NUMBER OF RESPONDENTS |
|---|---|
| Death of a Relative | 5 |
| Sons Did Not Want the Farm | 5 |
| Retirement | 10 |
| Late Preference for Other Employment | 6 |
| Insufficient Return | 20 |
| Other | 4 |
| TOTAL | 50 |

The Table shows that lack of income was the most important factor

predisposing farmers to leave the farm and nearly all of these men indica-

ted that lack of capital, insufficient land, or several years of poor crops

forced them off the land. Furthermore, a large number of farmers indicated

a desire to leave the farm subject to their obtaining a good price for their

land. A study in Alberta Census Division No. 12 revealed that twenty-five

percent of the farmers in that census division were interested in moving

off the farm (Alberta, Dept. Agriculture, 1967). In commenting on the need

for farm capital a Royal Commission in Saskatchewan stated that:

"Large scale investment in land and machinery is a necessary
prerequisite for success in agriculture today. For the large-
scale operator this capital investment can frequently be met
out of income and savings, and if not, credit is usually
readily available. For the small operator, however, capital
investment is the main barrier to economic efficiency."
(Saskatchewan, 1956, p. 29).

Table XII also shows that several sons of farmers did not want

the farm and this indicates the desire on the part of the young for the

benefits of urban living. Many young migrants indicated to the writer that

entertainment, recreation and the proximity to friends were the most import-

ant urban attractive forces.

"The material comforts of urban living are becoming more
attainable for farm people as a result of greater mobility
made possible by the automobile, better roads, higher
average farm income, and improved rural-urban communication
through press, radio, and, more recently through television.
Changes in rural attitudes towards material comforts are
focusing attention on rural deficiencies in education, trans-
portation, recreation, and home conveniences. This serves
to stimulate the movement of people out of agriculture into
urban occupations or the partial movement out of agriculture
through part or full-time urban residence." (Saskatchewan,
1956, p. 125).

The centralization of services in the largest of centres was

mentioned in Section I (above) as a factor explaining the decline of the

villages; the centralization of school services is particularly hasten-

ing the decline of the small rural hamlet. The move towards centraliza-

tion of schools, begun in the early 1940's, continues. Demand for graded

instruction, the need for high school education and the greater facilities

offered at a larger school seem to be the major determinants. The trend

to school centralization is very marked in the County. Whereas there were

fifty-one single room schools in 1950, there were only thirty-one by 1954

and eight in 1956. There were no schools in the County with less than two

rooms in 1961 and by 1966 no school had less than five rooms. At the
same time the number of schools in the County decreased from twenty in 1956
to ten in 1966 (County of Grande Prairie, 1956, 1961, 1966).

Many of the centralizing forces mentioned in this section have
been operating for at least two decades and although the trend is likely
to continue, the writer expects it to do so at a much slower rate than in
the past.

### III.   THE PATTERN OF MULTIPLE MOVES

This section is very brief and is only included in order that
any possible "stepwise" migratory movements from smaller to larger places
can be discerned.

Altogether 356 migrants responded reliably to the questionnaire
survey (137 migrants who moved within the County, 151 migrants who moved
to the County from other places in Alberta, and Sixty-eight migrants who
moved to the County from places outside Alberta). Of the 356 respondents,
thirty-six migrated more than once over the eleven-year period, 1956 to
1967. Nineteen migrants moved to points outside the County after June
1956, and later returned to the County before June 1967. Of these fourteen
went to other places in Alberta. The other nineteen multiple moves were
made by migrants moving solely within the County. Eleven families migrated
three or more times.

There is no strong pattern evident of any stepwise movement from
smaller to larger centres. Five migrant groups moved from smaller to
larger places.with an intermediate step either within or without the County,
but an equal number moved from a larger to a smaller place in a similar
fashion. Ten migrant groups moved from Grande Prairie to places outside
the County and then back to Grande Prairie all within the eleven-year period,

and six groups returned to their starting point after two internal migrations. Only two groups remain: those who moved to the County first into smaller places and then later moved into larger places, and the group in the reverse situation who first moved to larger places. Seven migrant groups moved to larger places in this fashion, but three groups moved to smaller places.

Thus stepwise migratory movements are of no observable importance in the pattern of migrations either to, or within, the County.

IV.  MIGRATORY MOVEMENTS AMONG THE SUBREGIONS

Throughout the eleven-year period, 1956 to 1967, with which this thesis has been concerned, every study subregion received migrants from at least one other subregion and thirteen of the fifteen subregions also received migrants from areas outside the County. Table XIII is a matrix which shows the probable origins of residents living in one of the study subregions at the time of the questionnaire survey. The diagonal row of the table shows the proportion of residents, in each subregion, that probably did not migrate over the eleven-year period 1956 to 1967.

The matrix shows that the urban subregions, except Wembley, received migrants from more places than any of the rural subregions – this is to be expected because of the central place function, or attraction, of the urban areas. Even if the central place function in Hythe and Sexsmith is decreasing, these large villages still attract migrants from far afield and Sexsmith is actually drawing migrants from more distant areas than Beaverlodge. The importance of Grande Prairie as the main focus of the County is clearly seen in that migrants were attracted to Grande Prairie from all but one of the subregions and more than sixty-five percent of the

# TABLE XIII

## PROBABILITY THAT A RESIDENT OF ONE SUBREGION

## ORIGINATED IN ANOTHER SUBREGION,

## OR OUTSIDE THE COUNTY, 1956 to 1967 [1]

| FROM | TO (RESIDENTIAL LOCATION AT TIME OF SURVEY) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | H | B | W | S | G.P. |
| 1 | 69.2* | | | | 4.2 | | | | | | 13.7 | 11.1 | | 3.7 | 0.8 |
| 2 | | 75.0* | | | | | | | | | 9.1 | | | | 0.4 |
| 3 | | | 78.3* | | | | 5.9 | | | | | | | 3.7 | 0.4 |
| 4 | 7.7 | | | 95.8* | | | | | | | 4.6 | 3.7 | | | |
| 5 | | | | | 54.1* | | | | | | 4.6 | 18.5 | | | 0.8 |
| 6 | | | | | 4.2 | 68.8* | | | | | | | | 3.7 | 2.0 |
| 7 | | | | | | | 76.5* | | | | | | | | 0.8 |
| 8 | | | 4.4 | | | | | 54.6* | | | | | | 7.4 | 4.8 |
| 9 | | | | | | | | | 66.7* | 5.3 | | | | | 1.2 |
| 10 | | | | | | | | | | 94.7* | | | 11.1 | | 1.6 |
| H | | 12.5 | | 4.2 | | | | | | | 50.0* | | 10.0 | 7.4 | 1.2 |
| B | | | | | 4.2 | | | | | | | 48.2* | | | 2.0 |
| W | | | | | | | | | | | | | 70.0* | | 1.2 |
| S | | | | | | | | 3.0 | | | | | | 48.2* | 2.4 |
| G.P. | 7.7 | | | | 4.2 | 6.3 | 11.8 | 21.2 | 19.0 | | | 3.7 | | 7.4 | 15.8* |
| Other Alta. | 7.7 | 6.3 | 8.7 | | 8.3 | 6.3 | | 18.2 | 14.3 | | 9.1 | 14.8 | 10.0 | 3.7 | 46.8 |
| Outside Alta. | 7.7 | 6.3 | 8.7 | | 20.9 | 18.8 | 5.9 | 3.0 | | | 9.1 | | 10.0 | 3.7 | 18.3 |

Source: Questionnaire Survey, June, July, 1967.

[1] June Years. Probability per 100 residents living the sub-region in June and July of 1967.

*Probability of residents of the subregion being residents since before June 1956.

Grande Prairie population probably originated in areas outside the County. Figure 9, which will be discussed further later, illustrates the flow of migrants to Grande Prairie and shows the probable origins of Grande Prairie residents.

In Chapter IV, section I, part 4b, it was indicated that the larger places in the County do not have greater relative importance as origins of migrants than do the smaller places. Table XIII demonstrates that the larger places do not increase their relative importance as origins of migrants. Whereas eleven percent of Beaverlodge's population probably came from subregion No. I, and over eighteen percent probably came from subregion No. 5, less than four percent originated in Grande Prairie.

The diagonal row of the matrix bears several important characteristics. Although the row shows the probable proportion of the population of each subregion which was non-migrant over the eleven-year period, one hundred minus this number gives the probable proportion of the population of each subregion which migrated to that subregion. A comparison of the observable proportion of migrants and the percent population change due to net migration gives an idea of the rate of population turn-over in each subregion. Notable is the fact that in each of the three fastest growing subregions (over the eleven-year period): Beaverlodge, Hythe and Grande Prairie, between three and four times more people were attracted to them than were still resident in them at the end of the period. Thus, between seven and eight migrants must have left these places for every ten who were attracted to them. The three subregions which had the greatest population loss over the period, subregions number: one, two and seven, each lost between twenty and thirty-two migrants for every ten migrants who were attracted to them. Thus, even areas with declining populations attracted

PROBABLE ORIGIN OF
GRANDE PRAIRIE RESIDENTS
1956 - 1967
(PER 1000 RESIDENTS)

COUNTY OF GRANDE PRAIRIE

9

LOCATION, COUNTY OF
GRANDE PRAIRIE

LEGEND

651 ↗   IN-MIGRANTS FROM OUTSIDE
COUNTY

158   PROBABLE NO. OF PERSONS PER
100C OF GRANDE PRAIRIE POP. (1967)
MIGRATING FROM THE SUBREGION
SHOWN

20
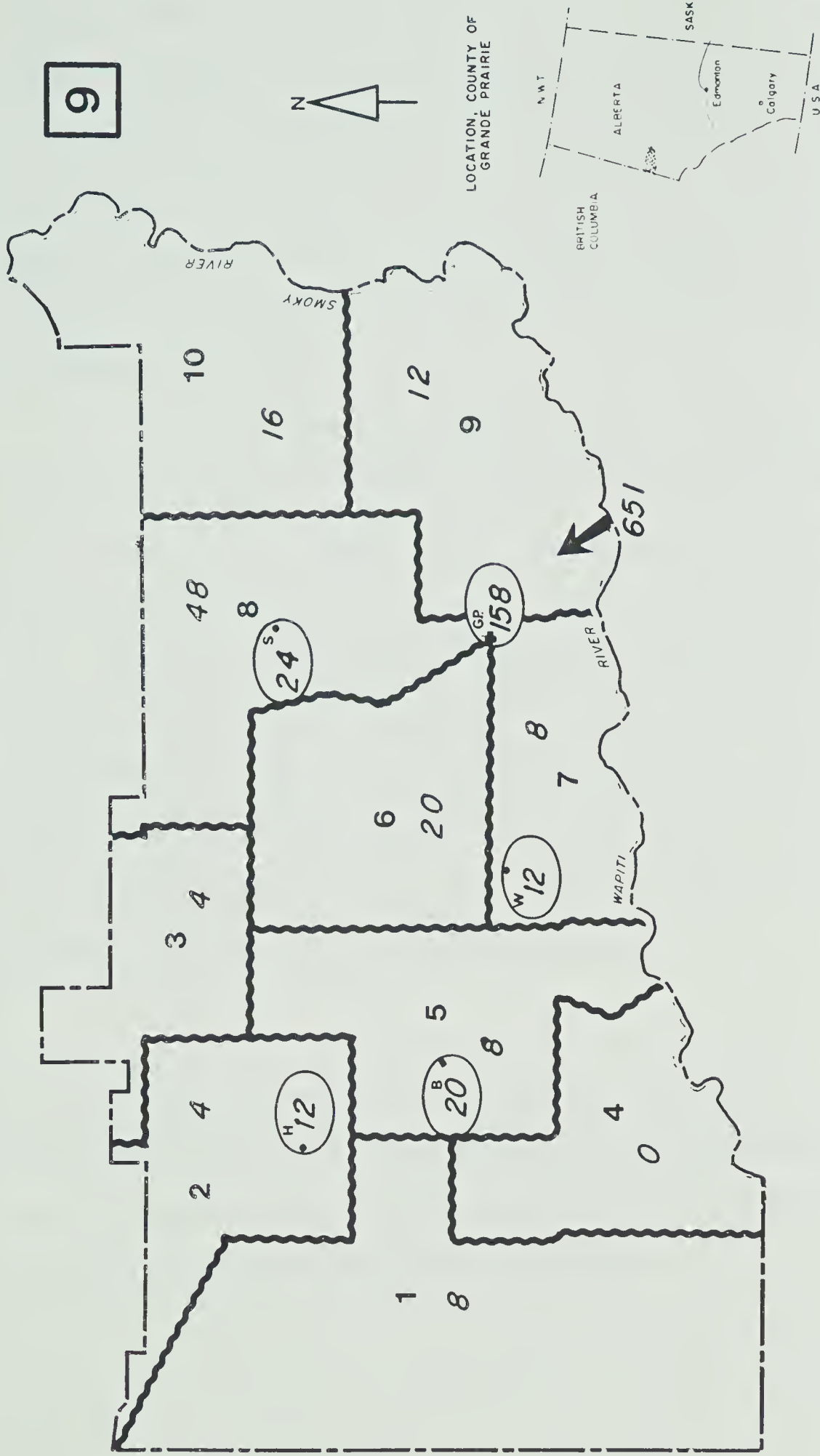
— — COUNTY BOUNDARY

⌒ URBAN SUBREGIONAL BOUNDARY

〰 RURAL SUBREGIONAL BOUNDARY

SOURCE D B S Census, 1966 & Field Survey

PJM August, 1968

migrants; these subregions simply lost far more migrants than they gained.

Population growth in the growing centres only continues because the rate of

in-migration is greater than the rate of out-migration. However, in addi-

tion to the population gain through net-migration the populations of the

fastest growing subregions: Beaverlodge and Grande Prairie, are becoming

increasingly concentrated in the twenty to fifty-four year old group, the

most mobile age group.

Figure 9 shows the probable origin of Grande Prairie residents

over the period 1956 to 1967; the figure illustrates the data contained

in the last column of Table XIII. The figure shows the flows of migrants to

Grande Prairie and that out of every 1,000 residents present in June and

July, 1967, 651 of them probably came from outside the County. The next

largest group contained 158 people per 1,000 residents and was composed of

people who had probably not migrated to Grande Prairie over the eleven-

year period. The figure shows also that the probability of a person migra-

ting to Grande Prairie from a rural subregion tends to decrease with the

distance that subregion is from Grande Prairie.

This Chapter has: (a) described the pattern of population change,

within the County, that is attributable to net-migration, (b) pointed out

the importance of the rural-urban migration, and (c) indicated the pattern

of migrations both to and within the County.

# CONCLUSION

Throughout the thesis the "pull" forces in migratory movements have been emphasized with only brief mention of the "push" forces. Although every migrant must obviously decide to leave a place when he or she goes to another place, very few people leave any location without a future altern- ative location being established first. Indicative of this is the high incidence of personal contacts of migrants with persons in the place of destination and the importance migrants placed on information about the place of destination. The forces of attraction drawing a migrant to an area are, therefore, thought by the writer, to be of greater significance than the forces of repulsion predisposing persons to seek. alternative loca- tions. The only time where the "push" forces seem uppermost, at least in the context of this study, is in those cases where a migrant had a change in family status (death of spouse, divorce, etc.) immediately prior to the move. Whether or not rural-urban migrants leave the farm because of the poor returns from farming or go to an urban area because of the expected better returns in alternative employment, is a moot point.

The lack of confirmation of many of the hypotheses which have become well established may reflect the real differences within small areas in the Alberta setting compared with Sweden where, because of the availability of statistics, much of the work on migration has been carried out. On the other hand the lack of significance of many of the relationships among the data groups and the high standard errors of estimate suggest that further research with an improved sampling design may obtain significantly better results.

The low coefficients for the regression of the number of migrants against the distance migrated reflects probably the mobility of Alberta residents, the value of the component of distance, which approached 0.5, in the potential equation, seems to confirm this conclusion. On the other hand, the lack of significance of the regression of the number of migrants to the County gainst the distance migrated is probably due to the spacing of central places in Alberta. The spacing of central places should not be ignored in a study of this type and transformations of the data on distances may be necessary to bring the distribution of distances between central places more closely to the normal distribution.

The very low multiple correlation coefficients for the explanation of the distance migrated, by the: age, income, education and family size of the migrant, would suggest that subjective factors are of great importance in predisposing persons to migrate. Migration involves far more than the simple interchange of people. The whole person and his attitude to his environment, as well as his ambitions, is involved. Migrants observed during this study had numerous motives, many of them based on chance, besides economic betterment, in deciding to move from one location to another. The importance of friends and kin, especially in association with the long-distance migrations, is paramount.

The concentration of population in only the largest of urban centres reflects the importance of agglomeration economics. Net-migration to the urban centres is both cause and effect of the concentration of services at these foci and if capital flows in the same direction as labour, net-migration and economic growth emerge as mutually reinforcing phenomena.

Finally, the geographic nature of migration cannot be questioned, for migratory movements occur over space because of the uneven distribution of opportunities and personal locational preferences within space.

## GLOSSARY

### BASIC DEFINITIONS OF TERMS USED IN THE STUDY

1. <u>Migrant</u> - One who changed residence from one urban or rural area to another urban or rural area within the time period under study.  The term is used to refer to the head of a migrant household and as the mean size of a migrant household was 2.85 persons for migrations within the County and 3.71 persons for migrations to the County, the number of people migrating from one area to another is obtained by multiplying the number of migrants by the appropriate household-size-factor.

2. <u>Net-Migration</u> - The migration balance of a community or area.  It consists of the number of in-migrants minus the number of out-migrants.  The net balance may be either positive or negative.

3. <u>In-Migrant</u> - A migrant who migrated into the study area or into one of the subregions within the study area.

4. <u>Out-Migrant</u> - A migrant who migrated out of the study area or out of one of the subregions within the study area.

5. <u>Area of Origin</u> - The area or community from which a migrant migrates.

6. <u>Area of Destination</u> - The area or community to which a migrant migrates.

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APPENDIX I

<u>THE QUESTIONNAIRE</u>

University of Alberta

<u>To the Head of the Household</u>

This questionnaire is confidential and information will only be used for thesis and academic purposes.

1. Have you changed residence since 1956?  (check one)  Yes __  No __

2. If you answered No to question 1, disregard the questionnaire but please return it.  If you answered Yes, please continue.

3. Address:  (a) If you live in a town or city give street, _____
                                          town, _____

            (b) If you live in a rural area give rural route number
                _____ section number _____ township number
                _____ and range number _____

4. Are you married?  Yes __  No __

5. What sex are you?  Male __  Female __

6. How many children have you? _____

7. Ages of all family members:  (check one column for each person)

|  | Age in Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | 1-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-44 | 45-59 | over 60 |
| Husband (or single male) | ... | ... | ... | ... | ... | ... | ... | ... |
| Wife (or single female) | ... | ... | ... | ... | ... | ... | ... | ... |
| Children: | | | | | | | | |
| 1 | ... | ... | ... | ... | ... | ... | ... | ... |
| 2 | ... | ... | ... | .... | ... | ... | ... | ... |
| 3 | ... | ... | ... | ... | ... | ... | ... | ... |
| 4 | ... | ... | ... | ... | ... | ... | ... | ... |
| 5 | ... | ... | ... | ... | ... | ... | ... | .... |

8. Were you born in the County of Grande Prairie?  Yes __  No __

9. (a) If you answered No to question 8, when did you first move to the
       County? _____ (give year)

9. (b) Where did you move from? _____

      If from elsewhere in Canada give town and province
      If from outside Canada, give country

    (c) Which town in the County did you first move to? _____
      If you moved to a rural area give the section, township, and
      range numbers. _____

10. If you answered Yes to question 8, which town or rural locality were
you born in? _____

11. You have changed residence since 1956. When did you move? And from
where to where? Please complete the table below.

For example:

| Year | From | To |
|------|------|-----|
| 1958 | Hythe | Beaverlodge |
| 1961 | Beaverlodge | B.C. |
| 1965 | B.C. | S. 31, Twp. 17, R. 6 West of 5th M. |

| | Year (& month if possible) | From | To |
|------|------|------|-----|
| First move | ............. | ............. | ............. |
| 2nd " | ............. | ............. | ............. |
| 3rd " | ............. | ............. | ............. |
| 4th " | ............. | ............. | ............. |
| 5th " | ............. | ............. | ............. |

12. (a) Did you have a job arranged before moving? Yes __ No __

    (b) Did you have a house or other accommodation arranged before
      moving? Yes __ No __

    (c) Did you receive any assistance with the moving expenses? Yes __
      No __

Please complete the table below for each move (check the columns that
are applicable)

| Yr. of Move | Job Arranged | House or Accomm. | Assistance |
|------|------|------|-----|
| .......... | .......... | ............ | .......... |
| .......... | .......... | ............ | .......... |
| .......... | .......... | ............ | .......... |
| .......... | .......... | ............ | .......... |
| .......... | .......... | ............ | .......... |

13. (a) Why did you move to each new location?

13. Please complete the table below.  Enter the year of move and check applicable reason.

| Reason for move: | 19.. | 19.. | 19.. | 19.. | 19.. |
|---|---|---|---|---|---|
| As a dependent | .... | .... | .... | .... | .... |
| For employment reasons | .... | .... | .... | .... | .... |
| For retirement | .... | .... | .... | .... | .... |
| For health reasons | .... | .... | .... | .... | .... |
| To be near relatives or friends | .... | .... | .... | .... | .... |
| Had just finished training | .... | .... | .... | .... | ..... |
| For land | .... | .... | .... | .... | .... |
| Other (specify) | .... | .... | .... | .... | .... |

14. (a) How did you learn about the conditions at each new location?

    Please complete the table below.  Enter year of move and check applicable reasons.

| Reason | 19.. | 19.. | 19.. | 19.. | 19.. |
|---|---|---|---|---|---|
| Just heard about the place | .... | .... | .... | .... | .... |
| Read of area or job opportunities in the newspaper | .... | .... | .... | .... | .... |
| Manpower or employment office | .... | .... | .... | .... | .... |
| Relatives told you | .... | .... | .... | .... | .... |
| Friends told you | .... | .... | .... | .... | .... |
| Don't know | .... | .... | .... | .... | .... |
| Other (specify) | .... | .... | .... | .... | .... |
| When you moved, did you change your job? Enter yes or no in column. | .... | .... | .... | .... | .... |
| Did you change your type of work? Enter yes or no in column. | .... | .... | .... | .... | .... |

    (b) If a friend or relative told you, had they previously moved to the area about which they were advising you?  Yes __  No __

15. (a) Are you self-employed?  Yes __  No __

    (b) Do you work for someone else (i.e. hired)?  Yes __  No __

15. (c) Are you a farmer? _____
                 office worker? _____
                 businessman? _____
    (check   labourer? _____
       one)  govt. employee? _____
                 professional? _____
                 retired? _____
                 other (specify)? _____

16. What sort of company do you work for?

                 Petroleum _____
                 Agricultural products \_\_\_\_
    (check   Manufacturing _____
       one)  Sales or service _____
                 Forest products _____
                 Other (specify) _____

17. (a) Income of male (or family head) - Check one category:

    under $2,000 \_\_\_\_    2-4,000 \_\_\_\_    4-6,000 \_\_\_\_    6-8,000 \_\_\_\_    8-10,000 \_\_\_\_
                              over $10,000 \_\_\_\_

    (b) Income of female (or wife)

    zero \_\_\_\_    under $2,000 \_\_\_\_    2-4,000 \_\_\_\_    4-6,000 \_\_\_\_    6-8,000 \_\_\_\_
                              over $8,000 \_\_\_\_

18. Education: (check one column)

| Completed Grade | 0-6 | 7-9 | 10 & 11 | 12 | Technical Training or Part University | University Graduate |
|---|---|---|---|---|---|---|
| Husband (or single male) | ... | ... | ... | ... | ... | ... |
| Wife (or single female | ... | ... | ... | ... | ... | ... |

19. Have you ever lived outside of the County since you first arrived here?
                              Yes \_\_    No \_\_

    If yes, when did you leave? _____ (year)
             "   "   " return? _____
    Where did you go to? _____
    To which locality in the County did you return? _____

20. (a) Were you ever a homesteader? Yes \_\_   No \_\_

    (b) Were you ever a farmer, and are not now? Yes \_\_   No \_\_

20. (c) If yes, why did you leave the farm?

........................................................................

........................................................................

(d) When did you leave the farm? _____ (year)

21. Are you planning to move again soon?  Yes __  No __

to where? _____
when? _____
why? _____

---

NOTE:

When a householder was interviewed personally, any secondary reason for
moving was also recorded.  For example, some interviewees indicated that
the primary reason for moving was to be near relatives with the secondary
motive of finding a new job.

# APPENDIX II

## CHI-SQUARE TEST OF SAMPLE RELIABILITY
(Households and responses by enumeration areas)

| NO. HOUSEHOLDS 1966 | NO. RESPONSES | E. % HOUSEHOLDS | O. % RESPONSES | O-E | $(O-E)^2$ | $\dfrac{(O-E)^2}{E.}$ |
|---|---|---|---|---|---|---|
| 70 | 3 | 0.56 | 0.65 | 0.65 | 0.423 | 0.35 |
| 42 | 2 | 0.72 | 0.37 | .35 | .123 | .17 |
| 56 | 6 | 0.97 | 1.11 | .14 | .019 | .02 |
| 77 | 7 | 1.33 | 1.23 | .10 | .010 | .00 |
| 57 | 3 | 0.98 | 0.56 | .42 | .176 | .18 |
| 93 | 14 | 1.58 | 2.47 | .89 | .792 | .50 |
| 67 | 9 | 1.16 | 1.67 | .51 | .260 | .22 |
| 59 | 1 | 1.02 | 0.18 | .16 | .026 | .03 |
| 61 | 4 | 1.05 | 0.75 | .30 | .090 | .09 |
| 59 | 4 | 1.02 | 0.75 | .30 | .090 | .09 |
| 85 | 16 | 1.47 | 2.98 | 1.51 | 2.28 | 1.53 |
| 37 | 7 | 0.64 | 1.23 | 0.59 | 0.35 | 0.55 |
| 55 | 5 | 0.95 | 0.94 | .01 | .000 | .00 |
| 80 | 3 | 1.38 | 0.56 | .82 | .672 | .48 |
| 46 | 3 | 0.79 | 0.56 | .23 | .053 | .07 |
| 54 | 6 | 0.93 | 1.11 | .18 | .032 | .03 |
| 97 | 10 | 1.65 | 1.87 | .22 | .048 | .03 |
| 63 | 7 | 1.09 | 1.23 | .14 | .019 | .02 |
| 41 | 7 | 0.71 | 1.23 | .52 | .027 | .04 |
| 61 | 6 | 1.05 | 1.11 | .06 | .004 | .00 |

CHI-SQUARE    Cont'd

| NO. HOUSEHOLDS 1966 | NO. RESPONSES | E. % HOUSEHOLDS | O. % RESPONSES | O-E | $(O-E)^2$ | $\frac{(O-E)^2}{E.}$ |
|---|---|---|---|---|---|---|
| 59 | 7 | 1.02 | 1.23 | .21 | .044 | .04 |
| 151 | 12 | 2.78 | 2.23 | .55 | .303 | .11 |
| 63 | 8 | 1.09 | 1.49 | .40 | .160 | .15 |
| 89 | 6 | 1.54 | 1.11 | .43 | .185 | .12 |
| 48 | 6 | 0.83 | 1.11 | .28 | .078 | .09 |
| 51 | 4 | 0.88 | 0.75 | .13 | .017 | .02 |
| 109 | 11 | 1.88 | 2.05 | .17 | .029 | .02 |
| 74 | 5 | 1.28 | 0.94 | .34 | .116 | .09 |
| 38 | 3 | 0.66 | 0.56 | .10 | .010 | .02 |
| 48 | 11 | 1.02 | 2.05 | .09 | .008 | .00 |
| 64 | 6 | 1.54 | 1.11 | .43 | .185 | .12 |
| 78 | 4 | 1.35 | 0.75 | .60 | .360 | .26 |
| 3003 | 252 | 51.81 | 47.09 | 4.72 | 22.28 | .43 |
| 294 | 27 | 5.07 | 5.04 | 0.03 | 0.000 | .00 |
| 149 | 27 | 2.57 | 5.04 | 2.47 | 6.101 | 2.36 |
| 126 | 22 | 2.17 | 4.10 | 1.93 | 3.725 | 1.72 |
| 82 | 10 | 1.41 | 1.87 | 0.46 | 0.211 | 0.15 |
| TOTAL 5796 | 544 | 100.00 | 100.00 | -- | -- | 10.10 |

A = 37, i.e. 36 degrees of freedom.

$X^2 = 10.10$

Thus there is a probability of greater than 99 percent that any difference between the observed and expected frequency of responses occurred merely by chance. That is, the agreement between the observed pattern of responses and the expected pattern of responses is significant above the 99 percent level. (See: Gregory, 1964, p. 155).

APPENDIX   III

## STEPWISE REGRESSION

Stepwise regression was used in order to determine the propor-
tion of the variation of the dependent variable accounted for by each inde-
pendent variable, an analytical asset not possible with straight regression.

"The stepwise regression technique is designed to include
one independent variable at the time, which means that it also
furnishes a number of intermediate regression equations never
computed with the traditional regression techniques.  In each
of those steps, the variable that accounts for most of the "non-
explained" variation in Y is entered.  This means, of course,
that the variable with the highest correlation coefficient with
respect to the dependent variable is the first one to be included
in the model.  The simple regression line depicting the relation-
ships between that variable and the dependent one is then esti-
mated by the ordinary least square technique, and step I in the
analysis has been completed.

"Step number 2 is initiated by derivation of partial cor-
relation coefficients and their T-values, it is easy to decide
which variable accounts for most of the remaining variations
in Y.  Step 2 is then completed by determining a new regres-
sion equation including both that variable and the one from
the first step.

"Subsequent steps are taken and new variables added simply
by repeating the described procedure.  When all specified var-
iables have been included in the model, the cycle terminates
automatically."  (Olsson, 1965, p. 17)

The stepwise regression programme is identical in function to
simple and multiple regression, except that the independent variables are
entered into the regression function in stepwise order.  The programme
requires three sub-programmes:  the simple correlation matrix, simple and
multiple regression, and the pivoting Gauss-Jordan inverse (Smillie,
1968, pp. 31, 24, 26, 35).

# APPENDIX IV

## CALCULATION OF NET MIGRATION TO
## SUBREGIONS WITHIN THE COUNTY

1. The death rates per 100 population by age groups in the County were
   calculated from the number of deaths by age groups for Alberta, and
   then adjusted for the Grande Prairie area according to the ratio of
   the local crude death rate to the Alberta crude death rate for each
   of the years 1956, 1961 and 1966 (Alberta, Dept. Health & Vital
   Stats., 1966, Table 6, p. 49).

### DEATH RATE PER 100 POPULATION BY AGE GROUPS
### (Grande Prairie Health Unit Area)

| AGE GROUP | 1966 | 1961 | 1956 |
|-----------|------|------|------|
| 0 - 4 | 0.20 | 0.20 | 0.20 |
| 5 - 9 | 0.03 | 0.03 | 0.03 |
| 10 - 14 | 0.03 | 0.03 | 0.03 |
| 15 - 19 | 0.10 | 0.10 | 0.10 |
| 20 - 24 | 0.13 | 0.13 | 0.13 |
| 25 - 34 | 0.12 | 0.12 | 0.12 |
| 35 - 44 | 0.18 | 0.18 | 0.18 |
| 45 - 54 | 0.41 | 0.41 | 0.41 |
| 55 - 64 | 1.04 | 1.04 | 1.12 |
| 65 - 69 | 2.50 | 2.00 | 2.10 |
| 70 + | 6.00 | 5.90 | 6.30 |

2. The birth rates per 100 female population by age groups were cal-
culated for Alberta, and then adjusted for the Grande Prairie area
according to the ratio of the local crude birth rate to the Alberta
crude birth rate for each of the years 1956, 1961 and 1966 (Alberta,
Dept. Health & Vital Stats., 1966, Table 35, pp. 164-165).

BIRTH RATE PER 100 FEMALES BY AGE GROUPS
(Grande Prairie Health Unit Area)

| AGE GROUP | 1966 | 1961 | 1956 |
|-----------|------|------|------|
| 15 - 19 | 6.9 | 9.1 | 9.8 |
| 20 - 24 | 21.8 | 27.4 | 29.4 |
| 25 - 34 | 14.0 | 19.0 | 20.4 |
| 35 - 44 | 4.0 | 5.5 | 5.9 |

3. Population by sex and age groups was obtained by enumeration area
(Canada, D.B.S., 1966).

4. The mean population of each subregion, by each age group, for each of
the time periods, 1956 - '61 and 1961 - '66, was then applied to the
respective mean birth and mean death rates, for each of the time per-
iods, to obtain the natural increase for each study subregion. Equa-
tion (1) applied to the population change and natural increase over
the period gave the population change due to net-migration. All three
figures are shown below.

NET-MIGRATION BY STUDY SUBREGIONS

1956 - '61 and 1961 - '66

| SUB-REGION | POPULATION CHANGE | | NATURAL INCREASE | | POPULATION CHANGE DUE TO NET-MIGRATION | |
|---|---|---|---|---|---|---|
| | 1956-'61 | 1961-'66 | 1956-'61 | 1961-'66 | 1956-'61 | 1961-'66 |
| 1 | -179 | + 33 | 68 | 55 | -247 | - 22 |
| 2 | - 42 | - 44 | 58 | 48 | -100 | - 92 |
| 3 | - 80 | - 59 | 52 | 45 | -132 | -104 |
| 4 | + 30 | - 41 | 53 | 48 | - 23 | - 89 |
| 5 | - 99 | - 27 | 84 | 62 | -183 | - 89 |
| 6 | +155 | - 30 | 85 | 73 | + 30 | -103 |
| 7 | -120 | - 77 | 103 | 70 | -223 | -147 |
| 8 | +187 | - 5 | 135 | 103 | + 52 | -108 |
| 9 | +225 | - 12 | 125 | 100 | +100 | -112 |
| 10 | + 6 | + 42 | 43 | 43 | - 37 | - 1 |
| H | - 32 | - 4 | 38 | 28 | - 70 | - 32 |
| B | +129 | +186 | 102 | 88 | + 27 | + 98 |
| W | + 31 | - 4 | 27 | 25 | + 4 | - 29 |
| S | +186 | - 40 | 48 | 40 | +138 | - 80 |
| G.P. | +2,050 | +3,065 | 1,321 | 1,058 | +729 | +2,007 |
| TOTAL | +2,407 | +2,983 | 2,342 | 1,886 | + 65 | +1,097 |

APPENDIX V

TABLE A

STEPWISE REGRESSION WITH NUMBER OF IN-MIGRANTS TO A SUBREGION

AS DEPENDENT VARIABLE[1]

(Calculated From The Results Of The Field Survey)

| VARIABLE (refers to area of destination) | REGRESSION COEFFICIENT | STANDARD ERROR | T-VALUE | PROPORTION 'EXPLAINED'[2] |
|---|---|---|---|---|
| Education level[3] (1961) | 0.0961 | 1.0100 | 0.0947 | 0.9960 |
| Population (1961) | 0.6000 | 0.2450 | 2.4400 | 0.0003 |
| % Pop. non-farm (1961) | 3.2400 | 1.5000 | 2.1500 | 0.0031 |
| % Pop. change 1956-'61 | -1.1900 | 1.3100 | -0.9090 | 0.0002 |
| No. out-migrants 1961-'66 | -0.3180 | 0.4400 | -0.7230 | 0.0001 |
| Av. income of wage earners (1961) | -0.0301 | 0.0747 | -0.4030 | 0.0000 |

[1] Migration over the period 1961 - 1966.

[2] Proportion of variation in the dependent variable 'explained' by variation in the independent variable.

[3] Number of residents in subregion with over 3 year's high school education.

TABLE B

STEPWISE REGRESSION WITH NUMBER OF NET—MIGRANTS

AS DEPENDENT VARIABLE

(Calculated From D.B.S. Data)

| VARIABLE | REGRESSION COEFFICIENT | STANDARD ERROR | T—VALUE | PROPORTION 'EXPLAINED'[2] |
|---|---|---|---|---|
| Education level[3] (1961) | 1.2100 | 0.8827 | 1.3710 | 0.9818 |
| Pop. in 25—64 yr. old group (1961) | 0.3087 | 2.0180 | 0.1530 | 0.0033 |
| Av. income of wage earners (1961) | −0.1075 | 0.0577 | −1.8630 | 0.0027 |
| % Pop. change 1956—'61 | −1.7230 | 1.3210 | −1.3050 | 0.0008 |
| % Pop. non—farm (1961) | 1.6510 | 1.2340 | 1.3370 | 0.0020 |
| Population 1961 | −0.1280 | 0.6547 | −0.1955 | 0.0000 |

[1] Migration over the period 1961 — 1966.

[2] Proportion of variation in the dependent variable 'explained' by variation in the independent variable.

[3] Number of residents in subregion with over 3 year's high school education.

## TABLE C

### CROSS CORRELATIONS AMONG MIGRANT CHARACTERISTICS

### AND DISTANCE MIGRATED

### (1) Migrants Within the County

|  | VARIABLE (refers to migrants) | | | | |
| VARIABLE | INCOME | AGE | EDUCATION | FAMILY SIZE | NO. MIGRANTS |
| Age | -0.016 | | | | |
| Education | **<br>0.236 | **<br>-0.573 | | | |
| Family Size | **<br>0.292 | -0.143 | -0.022 | | |
| No. Movers | *<br>0.190 | -0.035 | 0.098 | 0.104 | |
| Distance<br>Migrated | 0.017 | **<br>-0.265 | 0.118 | -0.045 | **<br>-0.277 |

### (2) Migrants to the County from Alberta

|  | VARIABLE (refers to migrants) | | | | |
| VARIABLE | INCOME | AGE | EDUCATION | FAMILY SIZE | NO. MIGRANTS |
| Age | 0.172 | | | | |
| Education | **<br>0.271 | *<br>-0.186 | | | |
| Family Size | **<br>0.346 | 0.069 | -0.172 | | |
| No. Movers | **<br>0.252 | -0.077 | 0.155 | 0.054 | |
| Distance<br>Migrated | 0.139 | 0.034 | 0.099 | -0.021 | 0.120 |

\* Significant at 5% level

\*\* Significant at 1% level

# TABLE D

## SIMPLE REGRESSION OF DISTANCE MIGRATED AGAINST

## CHARACTERISTICS OF THE MIGRANTS

### (Distance Migrated Is The Dependent Variable)

### (I) Migrations Within the County

| VARIABLE (refers to migrants) | CORRELATION COEFFICIENT | REGRESSION COEFFICIENT | STANDARD ERROR OF REGR. COEFF. | COMPUTED T-VALUE |
|---|---|---|---|---|
| Income | 0.0169 | 0.9450 | 0.8419 | 1.1225 |
| Age | -0.2650 ** | -1.2547 ** | 0.4330 | -2.8977 |
| Education | -0.1180 | -0.5073 | 0.8534 | -0.5945 |
| Family Size | -0.0446 | -0.5092 | 0.5170 | -0.9849 |

### (2) Migrations to the County from Alberta

| VARIABLE (refers to migrants) | CORRELATION COEFFICIENT | REGRESSION COEFFICIENT | STANDARD ERROR OF REGR. COEFF. | COMPUTED T-VALUE |
|---|---|---|---|---|
| Income | 0.1395 | 14.5690 | 12.0736 | 1.2067 |
| Age | 0.0336 | 2.7612 | 7.2231 | 0.3823 |
| Education | 0.0989 | 5.8410 | 11.0666 | 0.5279 |
| Family Size | -0.0207 | -5.3300 | 8.0402 | -0.6629 |

** Significant at 1% level.

APPENDIX VI

CHARACTERISTICS OF THE MIGRANTS (RESPONDENTS TO THE QUESTIONNAIRE)

TABLE A

MARITAL STATUS AND SEX IF SINGLE

| ORIGIN OF MIGRANT | MARITAL STATUS | | | SEX OF SINGLES | |
|---|---|---|---|---|---|
| | MARRIED | SINGLE | OTHER | MALE | FEMALE |
| Within County | 91 | 28 | 18 | 18 | 10 |
| Other Alberta | 108 | 31 | 12 | 17 | 14 |
| Outside Alberta | 45 | 17 | 4 | 9 | 8 |

TABLE B

AGE OF HEAD OF MIGRANT HOUSEHOLD

| ORIGIN OF MIGRANT | AGE GROUP (Years) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–59 | 60+ |
| Within County | 3 | 14 | 8 | 16 | 13 | 14 | 7 | 19 | 43 |
| Other Alberta | 4 | 12 | 29 | 31 | 17 | 21 | 14 | 17 | 6 |
| Outside Alberta | 1 | 7 | 8 | 12 | 12 | 11 | 5 | 7 | 5 |

TABLE C

EDUCATION

| ORIGIN OF MIGRANT | GRADE COMPLETED | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0–6 | 7–9 | 10 & 11 | 12 | Tech. or Part Univ. | Univ. Graduate | No Response |
| Within County | 24 | 44 | 48 | 6 | 9 | 7 | 0 |
| Other Alberta | 1 | 6 | 47 | 39 | 24 | 16 | 1 |
| Outside Alberta | 6 | 20 | 18 | 11 | 10 | 3 | 0 |

TABLE   D

INCOME   ($000's)

| ORIGIN OF MIGRANT | | UNDER 2 | 2-3.9 | 4-5.9 | 6-7.9 | 8-9.9 | OVER 10 | NO RESPONSE |
|---|---|---|---|---|---|---|---|---|
| Within County | Migrant | 3 | 63 | 34 | 17 | 7 | 1 | 12 |
| | Spouse | 7 | 10 | 4 | 1 | 0 | 0 | * |
| Other Alberta | Migrant | 3 | 20 | 52 | 41 | 14 | 11 | 10 |
| | Spouse | 6 | 8 | 7 | 1 | 0 | 0 | * |
| Outside Alberta | Migrant | 1 | 17 | 24 | 15 | 4 | 4 | 1 |
| | Spouse | 4 | 12 | 3 | 1 | 0 | 0 | * |

* Not relevant because of large proportion of single migrants.

TABLE   E

JOB AND ACCOMMODATION ARRANGED BEFORE MOVING

| ORIGIN OF MIGRANT | JOB ARRANGED | | ACCOMMODATION ARRANGED | |
|---|---|---|---|---|
| | YES | NO | YES | NO |
| Within County | 82 | 55 | 105 | 32 |
| Other Alberta | 113 | 38 | 87 | 64 |
| Outside Alberta | 41 | 27 | 49 | 19 |

TABLE   F

JOB CHANGE AND WORK CHANGE WITH THE MOVE

| ORIGIN OF MIGRANT | JOB CHANGE | | TYPE OF WORK CHANGE | |
|---|---|---|---|---|
| | YES | NO | YES | NO |
| Within County | 85 | 52 | 66 | 71 |
| Other Alberta | 66 | 85 | 39 | 112 |
| Outside Alberta | 50 | 18 | 32 | 36 |

## TABLE G

### THE REASONS FOR MOVING

| ORIGIN OF MIGRANT | RELATIVE OR FRIEND | DEPENDENT | EMPLOYMENT | RETIREMENT | HEALTH | TRANSFER | CHANGE FAMILY STATUS | LIKED THE AREA | OTHER | NO RESPONSE |
|---|---|---|---|---|---|---|---|---|---|---|
| **Within County** | | | | | | | | | | |
| Main Reason | 6 | 4 | 62 | 32 | 3 | 0 | 12 | 9 | 9 | 0 |
| Second Reason | 16 | 2 | 8 | 8 | 3 | 4 | 1 | 1 | 13 | 86 |
| **Other Alberta** | | | | | | | | | | |
| Main Reason | 16 | 13 | 108 | 3 | 1 | 2 | 2 | 2 | 4 | 0 |
| Second Reason | 4 | 0 | 8 | 1 | 0 | 33 | 2 | 3 | 5 | 95 |
| **Outside Alberta** | | | | | | | | | | |
| Main Reason | 22 | 1 | 33 | 3 | 2 | 2 | 1 | 1 | 3 | 0 |
| Second Reason | 2 | 0 | 4 | 1 | 0 | 10 | 1 | 3 | 4 | 42 |

## TABLE H

### FRIEND OR RELATIVE PRECEDING MIGRANT

| ORIGIN OF MIGRANT | YES | NO |
|---|---|---|
| Within County | 4 | 133 |
| Other Alberta | 29 | 122 |
| Outside Alberta | 26 | 42 |

TABLE I

MANNER IN WHICH INFORMATION ABOUT

DESTINATION WAS OBTAINED

| ORIGIN OF MIGRANT | NEWSPAPER | EMPLOYMENT OFFICE | PRIVATE ARRANGEMENT | RELATIVES | FRIENDS | LIVED NEARBY | TRANSFER | DON'T KNOW | OTHER | NO RESPONSE |
|---|---|---|---|---|---|---|---|---|---|---|
| Within County | 9 | 2 | 17 | 27 | 19 | 40 | 5 | 3 | 9 | 6 |
| Other Alberta | 12 | 3 | 22 | 33 | 18 | 1 | 35 | 2 | 10 | 15 |
| Outside Alberta | 3 | 0 | 2 | 33 | 9 | 0 | 10 | 0 | 6 | 1 |

TABLE J

YEAR OF MOVE

| ORIGIN OF MIGRANT | YEAR | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1956 -'57 | 1957 -'58 | 1958 -'59 | 1959 -'60 | 1960 -'61 | 1961 -'62 | 1962 -'63 | 1963 -'64 | 1964 -'65 | 1965 -'66 | 1966 -'67 |
| Within County | 6 | 14 | 14 | 11 | 15 | 7 | 12 | 15 | 15 | 11 | 17 |
| Other Alberta | 3 | 10 | 8 | 12 | 15 | 15 | 19 | 15 | 14 | 17 | 23 |
| Outside Alberta | 5 | 5 | 1 | 3 | 7 | 6 | 9 | 6 | 6 | 10 | 10 |

TABLE  K

JOB TYPE

| ORIGIN OF MIGRANT | FARMER | OFFICE WORKER | BUSINESSMAN | LABOURER | PROFESSIONAL | RETIRED | SALESMAN OR SERVICEMAN | TRADESMAN | OTHER | NO RESPONSE |
|---|---|---|---|---|---|---|---|---|---|---|
| Within County | 22 | 7 | 8 | 22 | 8 | 38 | 2 | 12 | 3 | 15 |
| Other Alberta | 8 | 21 | 14 | 27 | 20 | 3 | 7 | 28 | 9 | 14 |
| Outside Alberta | 9 | 10 | 13 | 12 | 3 | 2 | 1 | 9 | 5 | 4 |

TABLE  L

TYPE OF EMPLOYER

| ORIGIN OF MIGRANT | SELF-EMPLOYED | PETROLEUM PRODUCTS | AGRICULTURAL PRODUCTS | MANUFACTURER | SALES AND SERVICE | FOREST PRODUCTS | CONSTRUCTION | GOV'T AND ALLIED | TRANSPORTATION | OTHER | NO RESPONSE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Within County | 30 | 2 | 1 | 0 | 17 | 3 | 7 | 19 | 1 | 4 | 53 |
| Other Alberta | 21 | 4 | 5 | 3 | 28 | 10 | 16 | 38 | 3 | 6 | 17 |
| Outside Alberta | 6 | 1 | 2 | 4 | 18 | 3 | 3 | 12 | 2 | 11 | 6 |